

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Thompson, D.C. Examiner #: 69332 Date: 5/9/03  
Art Unit: 1711 Phone Number 301-2437 Serial Number: 101042359  
Mail Box and Bldg/Room Location: 3/AD29 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Enter one formula in claim 4, derived general formula of claim 1.  
Thanks.

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## STAFF USE ONLY

### Type of Search

### Vendors and cost where applicable

Searcher: <u>ED</u>	NA Sequence (#) _____	STN <u>\$196.90</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>✓(2)</u>	Questel/Orbit <u>(subset)</u>
Date Searcher Picked Up: _____	Bibliographic _____	Dr.Link _____
Date Completed: <u>5-14-03</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>51</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____

=> file reg

FILE 'REGISTRY' ENTERED AT 08:38:27 ON 14 MAY 2003  
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L4 5792 S L1 AND L2 FUL  
SAV L4 TRU359/A

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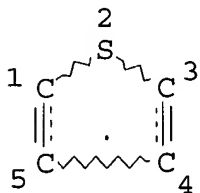
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L9 FILE 'CAOLD' ENTERED AT 08:27:57 ON 14 MAY 2003  
0 S L8

L10 FILE 'ZCA' ENTERED AT 08:27:59 ON 14 MAY 2003  
52 S L8

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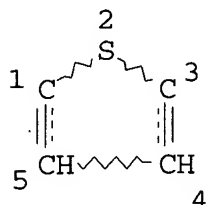
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STEREO ATTRIBUTES: NONE

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L5 STR



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DEFAULT ECLEVEL IS LIMITED

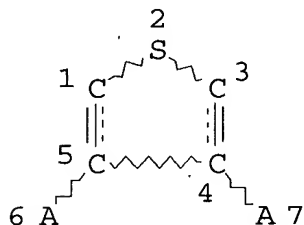
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RSPEC I

NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L6 STR



NODE ATTRIBUTES:

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NSPEC IS RC AT 7

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L8 66 SEA FILE=REGISTRY SUB=L4 SSS FUL L5 AND L6

100.0% PROCESSED 2801 ITERATIONS

SEARCH TIME: 00.00.01

66 ANSWERS

=> file zca

FILE 'ZCA' ENTERED AT 08:39:27 ON 14 MAY 2003

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=> d l10 1-52 cbib abs hitstr hitrn

L10 ANSWER 1 OF 52 ZCA COPYRIGHT 2003 ACS

138:304795 Photoluminescence and electroluminescence of mono- and dialkyl-substituted soluble polythiophenes. Angiolini, Luigi; Salatelli, Elisabetta; Bolognesi, Alberto; Botto, Chiara (Dipartimento di Chimica Industriale e dei Materiali, Univ. di Bologna, Bologna, 40136, Italy). e-Polymers [online computer file] Paper no. 41, No pp. given, Paper no. 41 (English) 2002. CODEN: EPOLCI. URL: [http://www.e-polymers.org/papers/bolognesi\\_190902.pdf](http://www.e-polymers.org/papers/bolognesi_190902.pdf) Publisher: European Polymer Federation.

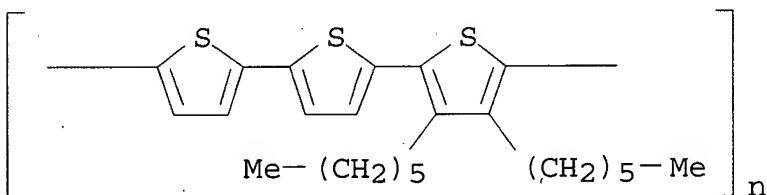
AB We report a comparison between optical properties (photoluminescence and UV-Vis absorption) and electroluminescence in a series of sol. polyalkylthiophenes with the aim of better understanding the role of different structural parameters, viz. length of side chains and introduction of unsubstituted thiophenes and their position in the backbone, on the electro-optical properties. The potential of these polymers as material for an active film in a single layer light emitting diode is evaluated.

IT 170660-79-4 510755-72-3

(photo- and electroluminescence of sol. polyalkylthiophenes)

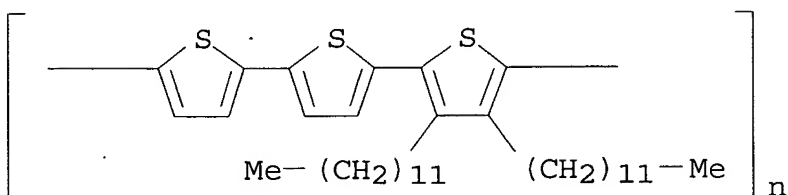
RN 170660-79-4 ZCA

CN Poly(3,4-dihexyl[2,2':5',2''-terthiophene]-5,5''-diyl) (9CI) (CA INDEX NAME)



RN 510755-72-3 ZCA

CN INDEX NAME NOT YET ASSIGNED



IT 170660-79-4 510755-72-3

(photo- and electroluminescence of sol. polyalkylthiophenes)

L10 ANSWER 2 OF 52 ZCA COPYRIGHT 2003 ACS

138:280390 Characterization of an EDTA Bonded Conducting Polymer Modified Electrode: Its Application for the Simultaneous Determination of Heavy Metal Ions. Rahman, Md. Aminur; Won, Mi-Sook; Shim, Yoon-Bo (Department of Chemistry and Korea Basic Science Institute, Pusan National University, Pusan, 609-735, S. Korea). Analytical Chemistry, 75(5), 1123-1129 (English) 2003. CODEN: ANCHAM. ISSN: 0003-2700. Publisher: American Chemical Society.

AB An EDTA bonded conducting polymer modified electrode (EDTA-CPME) was fabricated by polymn. of 3',4'-diamino-2,2';5',2''-terthiophene monomer on a GCE, followed by the reaction with EDTA in the presence of catalyst. The surface of the resulting modified electrode was characterized with EQCM, ESCA, SEM, Auger electron spectroscopy, scanning Auger microscopy, and electrochem. methods. The amts. of polymer and EDTA attached on the polymer film were detd. Simple immersing of the EDTA-CPME into a sample soln. led to the chem. deposition through the complexation with Pb<sup>2+</sup>, Cu<sup>2+</sup>, and Hg<sup>2+</sup> ions, simultaneously. Various exptl. parameters that affect the simultaneous anal. of the metal ions, e.g., EDTA amt., pH, deposition time, and deposition temp., were optimized. Calibration plots for the EDTA-CPME with square wave voltammetry were obtained in the concn. range between 5.0 .times. 10<sup>-10</sup> and 1.0 .times. 10<sup>-7</sup> M for Cu(II) and between 7.5 .times. 10<sup>-10</sup> and 1.0 .times. 10<sup>-7</sup> M for Pb(II) and Hg(II). The detection limits for Pb(II), Cu(II), and Hg(II) ions are .apprx.6.0 .times. 10<sup>-10</sup>, 2.0 .times. 10<sup>-10</sup>, and 5.0 .times. 10<sup>-10</sup> M, resp. Interference effects from other metal ions were studied at various pHs and there was little or no effect on the simultaneous detn. The stability of the EDTA-CPME was remarkably improved by coating the surface with the Nafion film, and the electrode can be used for more than one month. Anal. availability of the EDTA-CPME was demonstrated by the application for the certified std. urine ref. material and tap water.

IT 503269-64-5DP, amidation with activated EDTA  
(heavy metal ions detn. in urine and tap water by square wave voltammetry using EDTA bonded conducting polymer modified electrode)

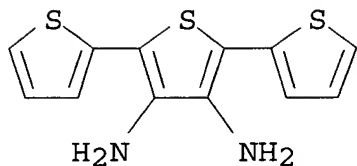
RN 503269-64-5 ZCA

CN [2,2':5',2''-Terthiophene]-3',4'-diamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 185691-91-2

CMF C12 H10 N2 S3



IT 503269-64-5P

(heavy metal ions detn. in urine and tap water by square wave voltammetry using EDTA bonded conducting polymer modified electrode)

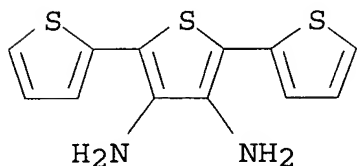
RN 503269-64-5 ZCA

CN [2,2':5',2''-Terthiophene]-3',4'-diamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 185691-91-2

CMF C12 H10 N2 S3



IT 503269-64-5DP, amidation with activated EDTA

(heavy metal ions detn. in urine and tap water by square wave voltammetry using EDTA bonded conducting polymer modified electrode)

IT 503269-64-5P

(heavy metal ions detn. in urine and tap water by square wave voltammetry using EDTA bonded conducting polymer modified electrode)

L10 ANSWER 3 OF 52 ZCA COPYRIGHT 2003 ACS

137:192423 Design, synthesis and characterization of polymers derived from fluorene for application in RGB polymer light-emitting diodes. Beaupre, Serge; Leclerc, Mario; Levesque, Isabelle; D'Iorio, Marie (Centre de Recherche en Sciences et Ingenierie des Macromolecules Universite Laval, Cite Universitaire, Quebec, G1K 7P4, Can.). Materials Research Society Symposium Proceedings, 665(Electronic, Optical and Optoelectronic Polymers and Oligomers), 187-192 (English) 2002. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.

AB To obtain efficient blue, green and red light-emitters as active layers in polymer light-emitting diode (PLEDs), the authors report herein the design, the synthesis, and the characterization of new polyesters and copolymers derived from fluorene. The authors will focus on a new approach to obtain a stable, high luminance blue

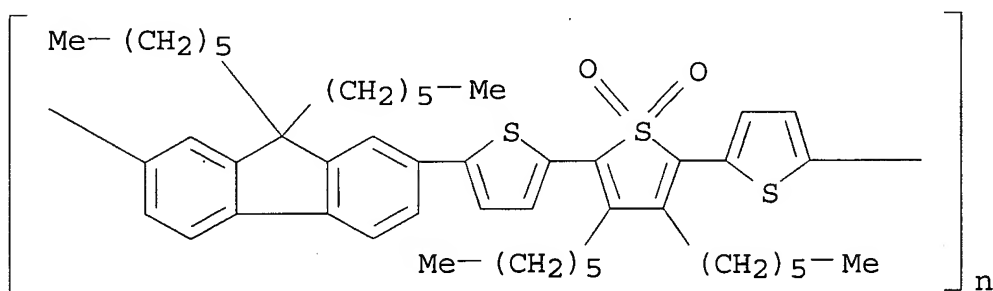
emitter via polyesters derived from fluorene. The versatile synthetic approach allows the easy design of a whole class of new and tunable electroactive and photoactive arom. polyesters. Poly(1,6-hexane-9,9',9'',9''',9''''-hexahexyl-7,2';7',2''-terfluorene-2,7''-dicarboxylate) (PTFHHC6) and Poly(1,6-hexane-2,7-Bis(1,1'-biphenylen-4-yl-4' -dicarboxylate)-9,9-dioctylfluorene) (PE-BP-DOF-BP) exhibit strong emission in the blue range, both in soln. and in the solid state. Also, these polyesters present some advantages over other polyfluorene derivs. For example, their solid-state fluorescence spectrum does not show the formation of any excimer and does not vary upon thermal treatment. The authors will also present copolymers derived from fluorene which emit green light and a new approach to obtain red polymer light-emitting-diode will also be shown. Optical properties such as light absorption, light emission and quantum yield of fluorescence in soln. as well as elec. properties such as cyclic voltammogram and cond. in-situ are reported. Finally, some of the polymers presented were tested in PLEDs devices and the preliminary results seem promising for the development of multicolored displays made from the same class of polyfluorene derivs.

IT 439588-84-8

(design, synthesis and characterization of polymers derived from fluorene for application in RGB polymer light-emitting diodes)

RN 439588-84-8 ZCA

CN Poly[(3',4'-dihexyl-1',1'-dioxido[2,2':5',2''-terthiophene]-5,5''-diyl)(9,9-dihexyl-9H-fluorene-2,7-diyl)] (9CI) (CA INDEX NAME)



IT 439588-84-8

(design, synthesis and characterization of polymers derived from fluorene for application in RGB polymer light-emitting diodes)

L10 ANSWER 4 OF 52 ZCA COPYRIGHT 2003 ACS

137:63811 Fluorene-based copolymers for red-light-emitting diodes.

Beaupre, Serge; Leclerc, Mario (Departement de Chimie, Centre de Recherche en Sciences et Ingenierie des Macromolecules, Universite Laval, Quebec City, QC, G1K 7P4, Can.). Advanced Functional Materials, 12(3), 192-196 (English) 2002. CODEN: AFMDC6. ISSN: 1616-301X. Publisher: Wiley-VCH Verlag GmbH.

AB The syntheses of new fluorene-based .pi.-conjugated copolymers poly((5,5''-(3',4'-dihexyl-2,2';5',2''-terthiophene 1',1'-dioxide))-alt-2,7-(9,9-dihexylfluorene)) (PFTORT),

poly((5,5''''-3'',4''-dihexyl-2,2':5',2':5'',2''':5''',2''''-quinquethiophene 1'',1''-dioxide)-alt-2,7-(9,9-dihexylfluorene)) (PFTTORTT), and poly((5,5-E-.alpha.-(2-thienylmethylene)-2-thiopheneacetonitrile)-alt-2,7-(9,9-dihexylfluorene)) (PFTCNVT), are reported. In the solid state, PFTORT and PFTCNVT present red-orange emission (with a max. at 610 nm) while PFTTORTT shows a red emission with a max. at 666 nm. In all cases, electrochem. measurements have revealed p- and n-dopable copolymers. All these copolymers have been successfully tested in simple light-emitting diodes and show promising results for orange- and red-light-emitting devices.

IT 439588-81-5P 439588-82-6P 439588-84-8P  
439588-85-9P

(fluorene-based copolymers for red-light-emitting diodes)

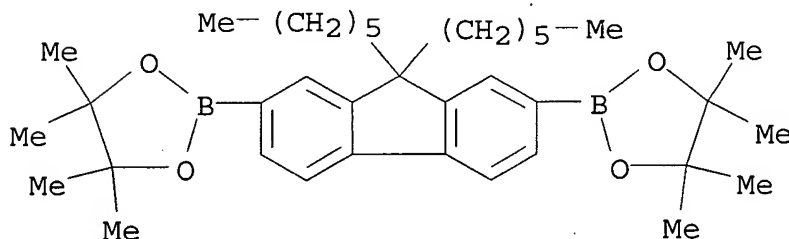
RN 439588-81-5 ZCA

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis[4,4,5,5-tetramethyl-, polymer with 3'',4''-dihexyl-5,5''''-diiodo-2,2':5',2':5'',2''':5''',2''''-quinquethiophene 1'',1''-dioxide (9CI) (CA INDEX NAME)

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CRN 254755-24-3

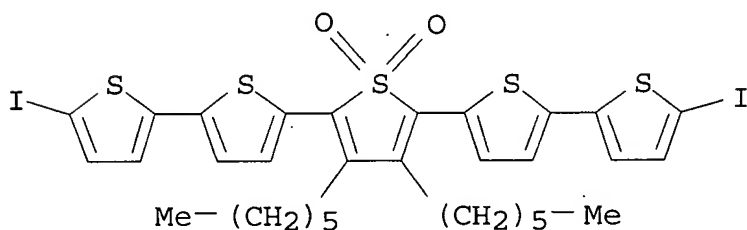
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CM 2

CRN 250379-96-5

CMF C32 H34 I2 O2 S5



RN 439588-82-6 ZCA

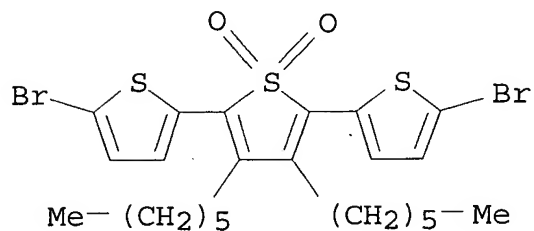
CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dihexyl-9H-fluorene-2,7-



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CRN 439588-80-4

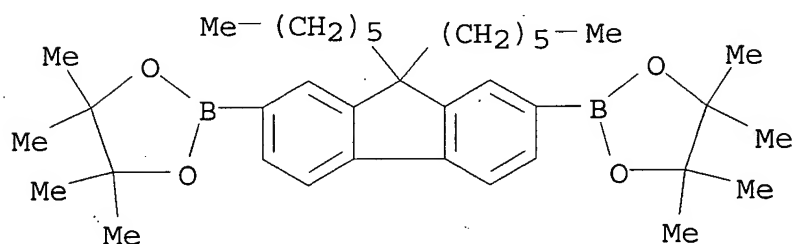
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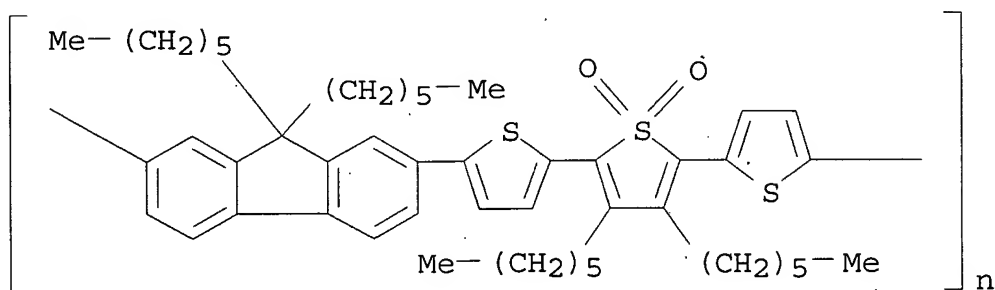
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CMF C37 H56 B2 O4



RN 439588-84-8 ZCA

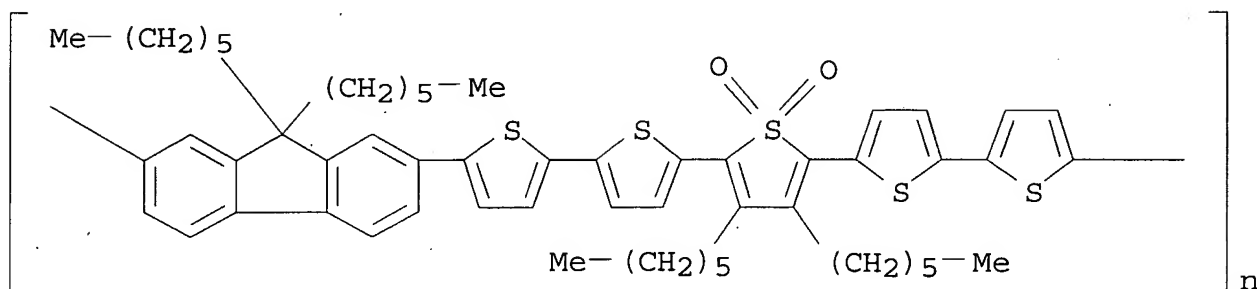
CN Poly[(3',4'-dihexyl-1',1'-dioxido[2,2':5',2''-terthiophene]-5,5'-diyl)(9,9-dihexyl-9H-fluorene-2,7-diyl)] (9CI) (CA INDEX NAME)



RN 439588-85-9 ZCA

CN Poly[(3'',4''-dihexyl-1'',1''-dioxido[2,2':5',2'':5'',2''':5''',2''''-quinquethiophene]-5,5''''-diyl)(9,9-dihexyl-9H-fluorene-2,7-diyl)]

(9CI) (CA INDEX NAME)



IT 439588-81-5P 439588-82-6P 439588-84-8P  
439588-85-9P

(fluorene-based copolymers for red-light-emitting diodes)

L10 ANSWER 5 OF 52 ZCA COPYRIGHT 2003 ACS

137:33928 Contribution of the Multiple Charge-Transfer Chromophore to the Orientation Stability of the Poled Polymer Film. Li, Shaojun; Yang, Zhou; Wang, Peng; Kang, Hu; Wu, Wei; Ye, Cheng; Yang, Mingjun; Yang, Xiaozhen (Center for Molecular Science Institute of Chemistry, The Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China). *Macromolecules*, 35(11), 4314-4316 (English) 2002. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB One of the novel multidimensional charge-transfer (CT) chromophores, 2-[4-(4,5-di(4-nitrophenyl)imidazolyl)phenyl]-4,5-di(4-aminophenyl)imidazole (DNPIPDAPI), was designed and synthesized; the polyimide was formed with it and 2,5-bis(4-aminophenyl)-3,4-diphenylthiophene (TPTDA) (BMI). The thermal and temporal stability of the poling-induced orientation were evaluated. The temporal orientation of the poled polyimide film with DNPIPDAPI was over 1000 h at 150 .degree.C, retaining 85% of the initial d33 value. Comparing with 1-D chromophores, the synthetic multiple CT chromophore possesses a better property in controlling the decay of the SHG activity.

IT 389141-87-1P 437658-48-5P

(prepn. and orientation stability of poled polyimides contg. multiple imidazole-based charge-transfer chromophores)

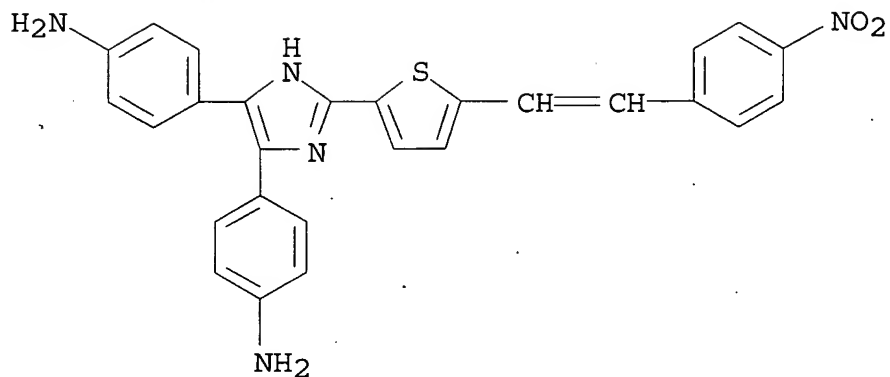
RN 389141-87-1 ZCA

CN 1H-Pyrrole-2,5-dione, 1,1'-[(3,4-diphenyl-2,5-thiophenediyl)di-4,1-phenylene]bis-, polymer with 4,4'-[2-[5-[2-(4-nitrophenyl)ethenyl]-2-thienyl]-1H-imidazole-4,5-diyl]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 389141-86-0

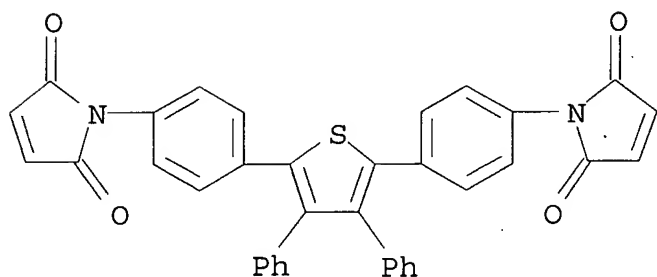
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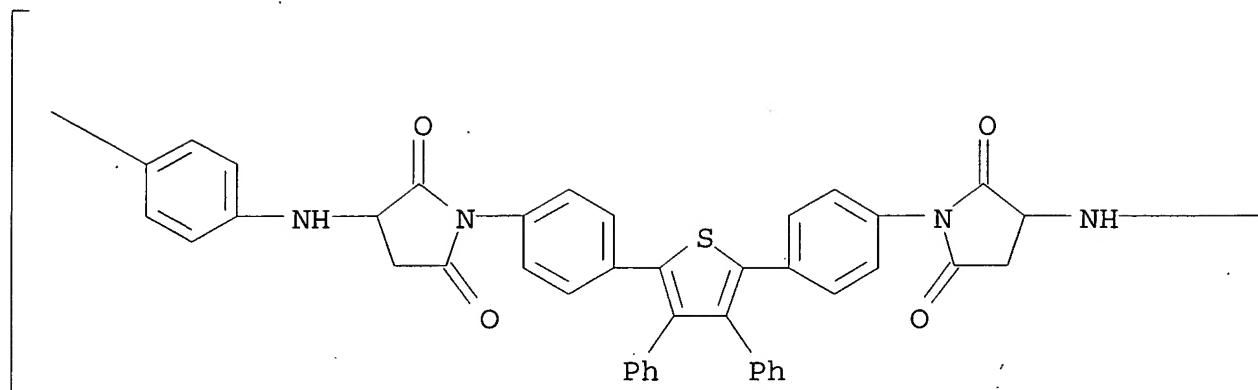
CMF C36 H22 N2 O4 S



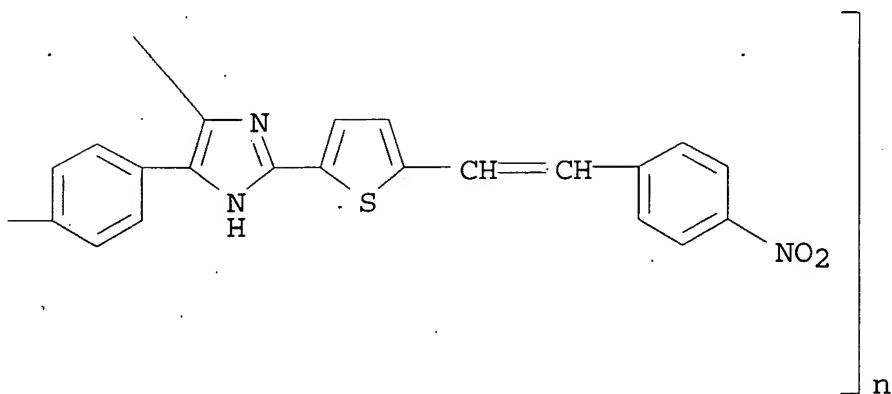
RN 437658-48-5 ZCA

CN Poly[[2-[2-[5-(4-nitrophenyl)ethenyl]-2-thienyl]-1H-imidazole-4,5-diyl]-1,4-phenyleneimino(2,5-dioxo-3,1-pyrrolidinediyl)-1,4-phenylene(3,4-diphenyl-2,5-thiophenediyl)-1,4-phenylene(2,5-dioxo-1,3-pyrrolidinediyl)imino-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 389141-87-1P 437658-48-5P

(prepn. and orientation stability of poled polyimides contg.  
multiple imidazole-based charge-transfer chromophores)

L10 ANSWER 6 OF 52 ZCA COPYRIGHT 2003 ACS

137:33855 Synthesis and electropolymerization of 3',4'-bis(alkylsulfanyl)terthiophenes and the significance of the fused dithiin ring in 2,5-dithienyl-3,4-ethylenedithiophene (DT-EDTT). Pozo-Gonzalo, Cristina; Khan, Tahir; McDouall, Joseph J. W.; Skabara, Peter J.; Roberts, Donna M.; Light, Mark E.; Coles, Simon J.; Hursthouse, Michael B.; Neugebauer, Helmut; Cravino, Antonio; Sariciftci, N. Serdar (Department of Chemistry, University of Manchester, Manchester, M13 9PL, UK). Journal of Materials Chemistry, 12(3), 500-510 (English) 2002. CODEN: JMACEP. ISSN: 0959-9428. Publisher: Royal Society of Chemistry.

AB A new series of regioregular poly(terthiophenes), bearing

bis(thioether) side groups, was prepd. by electrochem. oxidn. Cyclic voltammetry of the parent trimers reveals an increase in electron donating ability in cyclic thioether derivs. For example, one compd. contg. a central ethylenedithiophene (EDTT) unit gives two irreversible oxidn. peaks which are significantly lower than the corresponding values for the structurally analogous bis(methylthio) deriv. (.DELTA.E1ox=170 mV, .DELTA.E2ox=30 mV). The difference in oxidn. potentials of each terthiophene in acetonitrile soln. can be explained by examg. the HOMO (HOMO) energies. The electrochem. behavior of the polymers illustrates the increase in p-doping ability of the EDTT-contg. polymer. The cyclic voltammograms and electronic absorption spectra of the polymers show that the polymers contg. cyclic thioether units have the lowest bandgap in the series (ca. 1.4 V and 1.5 eV, resp.). Photoinduced IR spectroscopy of poly(dithienyl-3,4-ethylenedithiophene) provides evidence of a long-living photoexcited charged state in the polymer.

IT 350679-95-7P 350679-97-9P

(synthesis of regioregular polyterthiophenes bearing bis(thioether) side groups)

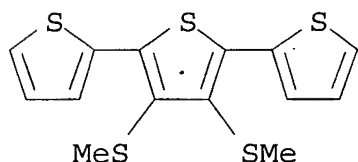
RN 350679-95-7 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-bis(methylthio)-, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

CRN 350679-90-2

CMF C14 H12 S5



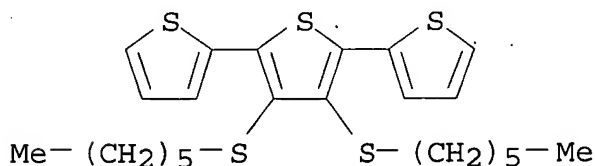
RN 350679-97-9 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-bis(hexylthio)-, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

CRN 350679-91-3

CMF C24 H32 S5



IT 350679-95-7P 350679-97-9P

(synthesis of regioregular polyterthiophenes bearing bis(thioether) side groups)

L10 ANSWER 7 OF 52 ZCA COPYRIGHT 2003 ACS

136:102908 Nonlinear optical polyimide with high thermal stability prepared by simultaneous poling and polymerization. Kang, Hu; Wu, Wei; Wu, Peiji; Ye, Cheng (Center for Molecular Science, Organic Solids Laboratory, Institute of Chemistry, Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China). Chinese Science Bulletin, 46(10), 827-831 (English) 2001. CODEN: CSBUEF. ISSN: 1001-6538. Publisher: Science in China Press.

AB The high Tg polyimide embedded with a novel imidazol-typed chromophore 2-[5-(4-nitrostilbenyl)thienyl]-4,5-di(4-aminophenyl)imidazole (NSTDAPI) was prepd. using the simultaneous poling and polymn. technique. The glass transition temp. (Tg) is 304.degree. and the initial decompn. temp. (Td) is 330.degree.. The in-situ second harmonic generation (in-situ SHG) measurement was performed to study its poling behavior and the stability of the poling-induced orientation. The nonlinear optical coeff. d33 of poled polyimide film is 32.2 pm/V at 1064 nm fundamental wavelength. The SHG signal of the poled polymer film was quite stable <200.degree., and then began to decay rapidly >220.degree.. The half-decay temp. of dipole orientation for the film is 250.degree..

IT 389141-87-1P

(nonlinear optical polyimide with high thermal stability prepd. by simultaneous poling and polymn.)

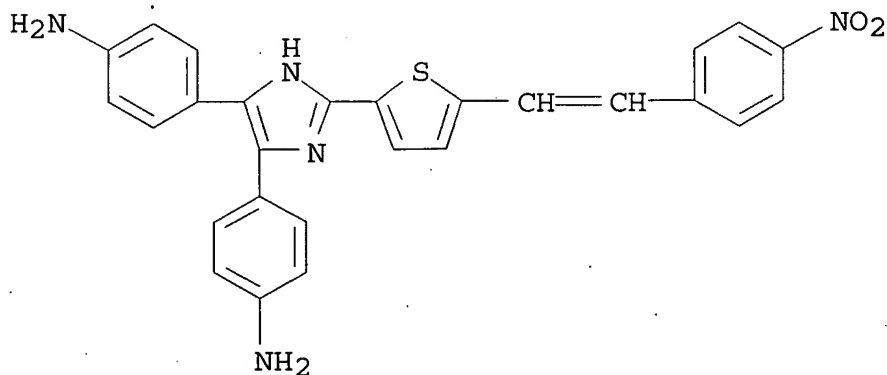
RN 389141-87-1 ZCA

CN 1H-Pyrrole-2,5-dione, 1,1'-[(3,4-diphenyl-2,5-thiophenediyl)di-4,1-phenylene]bis-, polymer with 4,4'-[2-[5-[2-(4-nitrophenyl)ethenyl]-2-thienyl]-1H-imidazole-4,5-diyl]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 389141-86-0

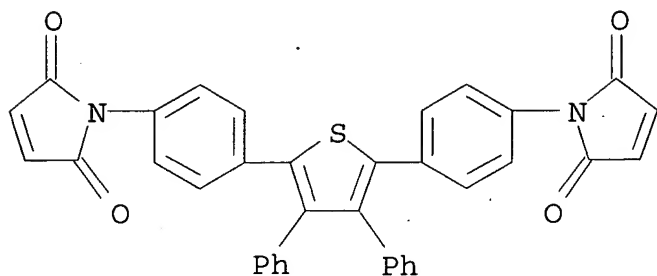
CMF C27 H21 N5 O2 S



CM 2

CRN 118338-94-6

CMF C36 H22 N2 O4 S



IT 389141-87-1P

(nonlinear optical polyimide with high thermal stability prepd. by simultaneous poling and polymn.)

L10 ANSWER 8 OF 52 ZCA COPYRIGHT 2003 ACS

136:29028 Visible light-conductive silicone polymers and production methods therefor. Kakimoto, Masaya; Takiguchi, Toshihiko (Sumitomo Electric Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001335639 A2 20011204, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-160108 20000530.

AB Polymers comprise repeating units of Si atoms and visible light-responsive .pi.-conjugated units in the main chain and .gtoreq.1 nitro group in the side chains of the .pi.-conjugated units. Thus, photoconductive poly[tetrabutylidisilanylene-3",4"-dinitroquinque(2,5-thienylene)] was prepd.

IT 378247-56-4P 378247-57-5P 378247-59-7P  
378247-61-1P 378247-62-2P 378247-64-4P

(visible light-conductive silicone polymers and prodn. methods therefor)

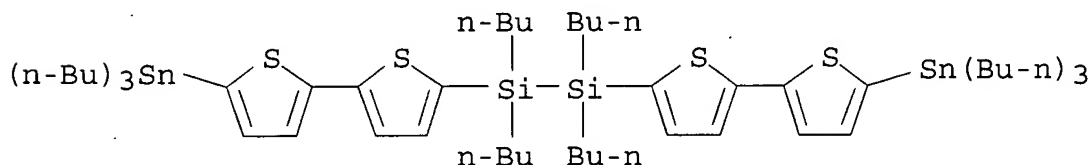
RN 378247-56-4 ZCA

CN Disilane, 1,1,2,2-tetrabutyl-1,2-bis[5'-(tributylstannyl)[2,2'-bithiophen]-5-yl]-, polymer with 2,5-dibromo-3,4-dinitrothiophene (9CI). (CA INDEX NAME)

CM 1

CRN 378247-55-3

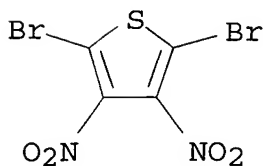
CMF C56 H98 S4 Si2 Sn2



CM 2

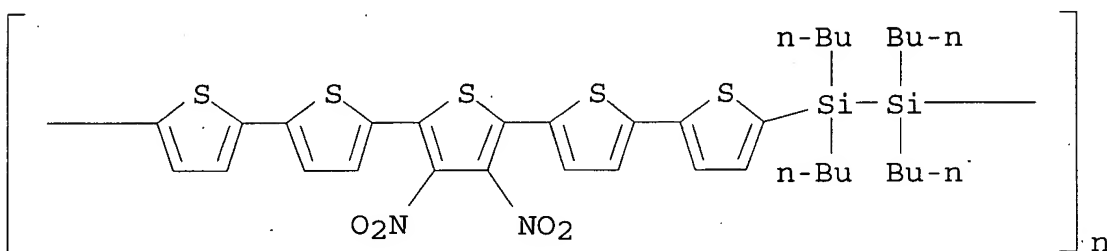
CRN 52431-30-8

CMF C4 Br2 N2 O4 S



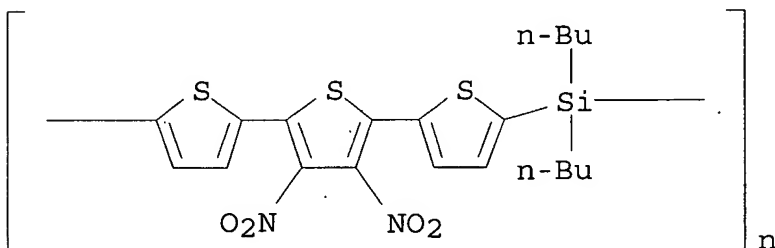
RN 378247-57-5 ZCA

CN Poly[(3',4'-dinitro[2,2':5',2'':5'',2''':5''',2''''-quinquethiophene]-5,5''''-diyl)(1,1,2,2-tetrabutyl-1,2-disilanediy)] (9CI) (CA INDEX NAME)



RN 378247-59-7 ZCA

CN Poly[(3',4'-dinitro[2,2':5',2''-terthiophene]-5,5''-diyl)(dibutylsilylene)] (9CI) (CA INDEX NAME)



RN 378247-61-1 ZCA

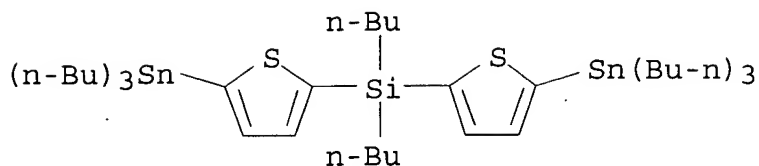
CN Silane, dibutylbis[5-(tributylstannyl)-2-thienyl]-, polymer with 2,5-dibromo-3,4-dinitrothiophene (9CI) (CA INDEX NAME)

CM 1

CRN 378247-60-0

CMF C40 H76 S2 Si Sn2

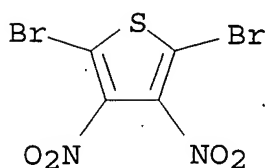




CM 2

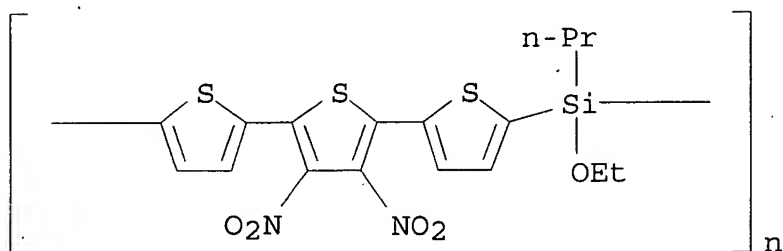
CRN 52431-30-8

CMF C4 Br2 N2 O4 S



RN 378247-62-2 ZCA

CN Poly[(3',4'-dinitro[2,2':5',2''-terthiophene]-5,5''-diyl)(ethoxypropylsilylene)] (9CI) (CA INDEX NAME)



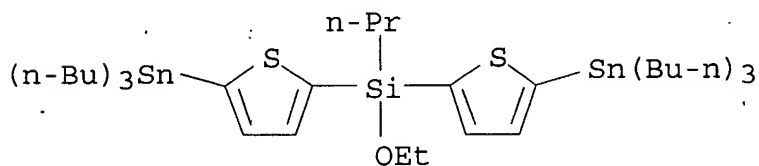
RN 378247-64-4 ZCA

CN Silane, ethoxypropylbis[5-(tributylstannyl)-2-thienyl]-, polymer with 2,5-dibromo-3,4-dinitrothiophene (9CI) (CA INDEX NAME)

CM 1

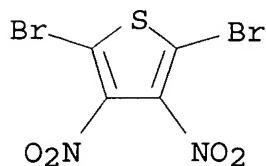
CRN 378247-63-3

CMF C37 H70 O S2 Si Sn2



CM 2

CRN 52431-30-8  
CMF C4 Br2 N2 O4 S



IT 378247-56-4P 378247-57-5P 378247-59-7P  
378247-61-1P 378247-62-2P 378247-64-4P  
(visible light-conductive silicone polymers and prodn. methods therefor)

L10 ANSWER 9 OF 52 ZCA COPYRIGHT 2003 ACS  
135:123138 3,4-Disubstituted terthiophene systems: synthesis and electropolymerization. Pozo-Gonzalo, C.; Roberts, D. M.; Skabara, P. J. (Materials Research Institute, Pond Street, Sheffield Hallam University, Sheffield, S1 1WB, UK). Synthetic Metals, 119(1-3), 115-116 (English) 2001. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A..

AB The first examples of terthiophenes bearing dialkylmercapto substituents on the central ring are reported, together with their redox properties and electropolymerization studies.

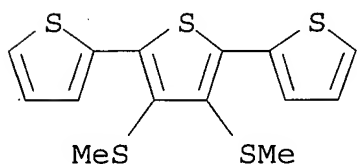
IT 350679-95-7P 350679-97-9P  
(synthesis and electropolymerization of 3,4-disubstituted terthiophenes)

RN 350679-95-7 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-bis(methylthio)-, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

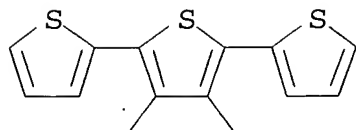
CRN 350679-90-2  
CMF C14 H12 S5



RN 350679-97-9 ZCA  
CN 2,2':5',2''-Terthiophene, 3',4'-bis(hexylthio)-, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

CRN 350679-91-3  
CMF C24 H32 S5



Me- (CH<sub>2</sub>)<sub>5</sub>-S      S- (CH<sub>2</sub>)<sub>5</sub>-Me

IT 350679-95-7P 350679-97-9P

(synthesis and electropolymn. of 3,4-disubstituted terthiophenes)

L10 ANSWER 10 OF 52 ZCA COPYRIGHT 2003 ACS

135:5945 Thiophene-based branched conjugated polymers. Sankaran, Balasubramanian; Vaia, Richard A.; Tan, Loon-Seng (Universal Technology Corporation, Dayton, OH, 45432-2600, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 42(1), 602-603 (English) 2001. CODEN: ACPPAY. ISSN: 0032-3934. Publisher: American Chemical Society, Division of Polymer Chemistry.

AB Four monomers of thiophene having A<sub>2</sub>B<sub>x</sub> (x = 0 or 2) functionality were prep'd. and characterized. Monomers, 3,4-bis(2-thienyl)thiophene [3,4-Th<sub>2</sub>Th] and 3,4-bis(2-ethylenedioxythienyl)thiophene [3,4-(BEDOT)<sub>2</sub>Th] were synthesized by Stille coupling of dibromothiophene with 2-tributyltinthiophene and 2-tributyltinethylenedioxythiophene, resp. Monomers, 2,3,5-tris(2-thienyl)-4-hexyl thiophene [2,3,5-Th<sub>2</sub>(TH)Th] and 2,3,5-tris(3,5-ethylenedioxythien-2-yl)-4-hexylthiophene [2,3,5-(EDOT)<sub>2</sub>TH(EDOT)] were obtained by coupling of 2,3,5-tribromo-4-hexylthiophene with 2-tributyltinthiophene and 2-tributyltin ethylenedioxythiophene. The monomers are sol. in common org. solvents and the electrochem. redox mechanism was studied; [2,3,5-(EDOT)<sub>2</sub>TH(EDOT)] has the lowest oxidn. potential at 0.36 V, while [3,4-Th<sub>2</sub>Th] has the highest at 0.75 V. Electropolymn. of [3,4-Th<sub>2</sub>Th] and [3,4-(BEDOT)<sub>2</sub>Th] yielded electroactive films while that of [2,3,5-Th<sub>2</sub>(TH)Th] and [2,3,5-(EDOT)<sub>2</sub>TH(EDOT)] did not result in film deposition. Chem. polymn. of [2,3,5-Th<sub>2</sub>(TH)Th] via oxidative coupling reaction yielded a sol. polymer while Stille coupling reaction of tribromohexylthiophene with dimethyltinbithiophene yielded mostly sol. polymeric materials.

IT 342433-63-0P

(hyperbranched; prep'n. of substituted thiophene monomers and chem. and electrochem. polymn. to obtain sol. branched polythiophene conjugated polymers)

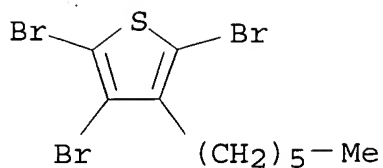
RN 342433-63-0 ZCA

CN Stannane, [2,2'-bithiophene]-5,5'-diylbis[trimethyl-, polymer with 2,3,5-tribromo-4-hexylthiophene (9CI) (CA INDEX NAME)]

CM 1

CRN 342433-56-1

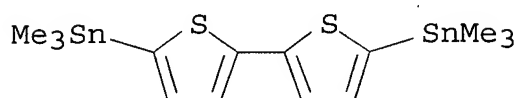
CMF C10 H13 Br3 S



CM 2

CRN 143367-56-0

CMF C14 H22 S2 Sn2



IT 342433-59-4P 342433-61-8P

(prepn. of substituted thiophene monomers and chem. and electrochem. polymn. to obtain sol. branched polythiophene conjugated polymers)

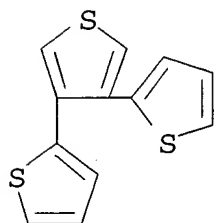
RN 342433-59-4 ZCA

CN 2,3':4',2''-Terthiophene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 101306-11-0

CMF C12 H8 S3



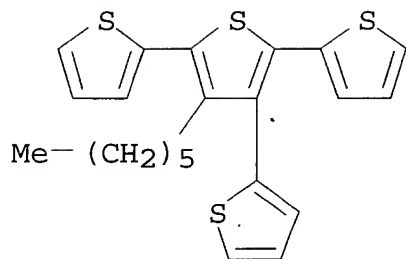
RN 342433-61-8 ZCA

CN 2,2':3',2''-Terthiophene, 4'-hexyl-5'-(2-thienyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 342433-57-2

CMF C22 H22 S4



IT **342433-63-0P**

(hyperbranched; prepn. of substituted thiophene monomers and chem. and electrochem. polymn. to obtain sol. branched polythiophene conjugated polymers)

IT **342433-59-4P 342433-61-8P**

(prepn. of substituted thiophene monomers and chem. and electrochem. polymn. to obtain sol. branched polythiophene conjugated polymers)

L10 ANSWER 11 OF 52 ZCA COPYRIGHT 2003 ACS

135:5936 Synthesis and optical properties of (thienylene)-[1,6-dithienylhexa-1,3,5-trienylene] copolymers. Embert, Franck; Lere-Porte, Jean-Pierre; Moreau, Joel J. E.; Serein-Spirau, Françoise; Righi, Arieta; Sauvajol, Jean-Louis (Heterochimie Moléculaire et Macromoléculaire, UMR CNRS 076, E.N.S.C.M., l'Ecole Normale, Montpellier, 34296, Fr.). Journal of Materials Chemistry, 11(3), 718-722 (English) 2001. CODEN: JMACEP. ISSN: 0959-9428. Publisher: Royal Society of Chemistry.

AB Two [thiophene-1,6-dithienylhexa-1,3,5-triene] copolymers were prepd. by a palladium catalyzed coupling reaction of 2,5-dibromothiophene (I) or 2,5-dibromo-3-octylthiophene (II) and a bis(tributylstannyl) deriv. of a 1,6-dithienylhexa-1,3,5-triene unit. The electrochromism and the photoluminescence properties of the highly conjugated polymers were studied. In the solid state the polymers have strong photoluminescence bands at 2.0 eV (from II) and 1.95 eV (from I). The polymer from I seems particularly promising for use as a red-light emitting diode, and both polymers exhibit red-pale blue electrochromism that makes them suitable for fabricating new devices.

IT **340702-40-1P**

(prepn. and electrochromism and photoluminescence of thiophene deriv. polymers)

RN 340702-40-1 ZCA

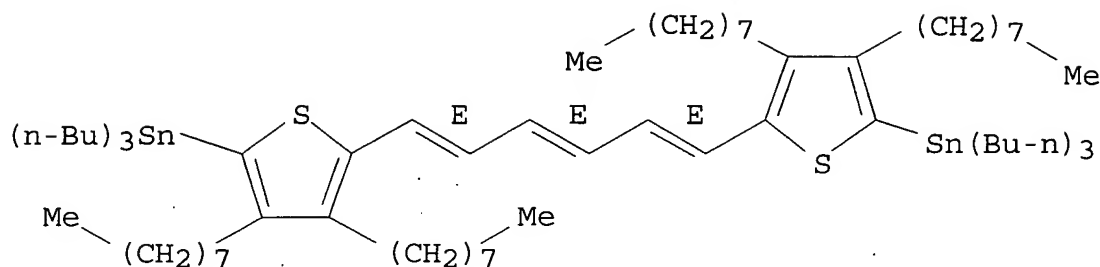
CN Stannane, [[(1E,3E,5E)-1,3,5-hexatriene-1,6-diyl]bis(3,4-dioctyl-5,2-thiophenediyl)]bis[tributyl-, polymer with 2,5-dibromothiophene (9CI) (CA INDEX NAME)

CM 1

CRN 340702-39-8

CMF C70 H128 S2 Sn2

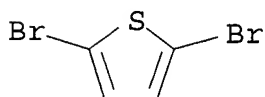
Double bond geometry as shown.



CM 2

CRN 3141-27-3

CMF C4 H2 Br2 S

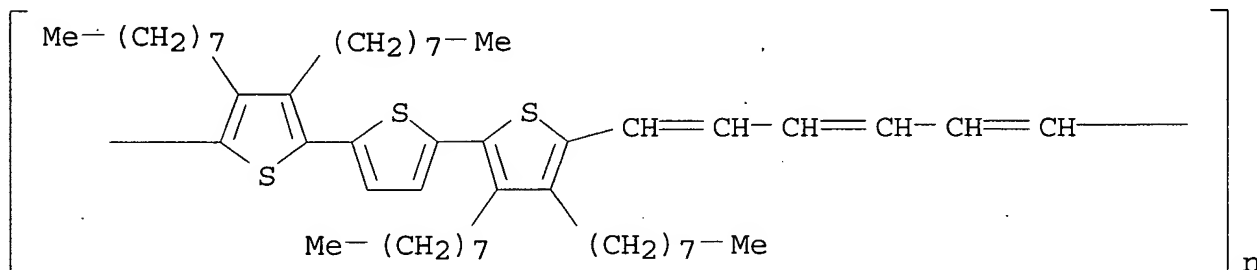


IT 340702-42-3P

(prepn. and electrochromism and photoluminescence of thiophene deriv. polymers)

RN 340702-42-3 ZCA

CN Poly[(3,3'',4,4''-tetraoctyl[2,2':5',2''-terthiophene]-5,5''-diyl)-(1E,3E,5E)-1,3,5-hexatriene-1,6-diyl] (9CI) (CA INDEX NAME)



IT 340702-40-1P

(prepn. and electrochromism and photoluminescence of thiophene deriv. polymers)

IT 340702-42-3P

(prepn. and electrochromism and photoluminescence of thiophene deriv. polymers)

L10 ANSWER 12 OF 52 ZCA COPYRIGHT 2003 ACS

134:266879 Poly(3-arylthiophenes): Syntheses of Monomers and Spectroscopic and Electrochemical Characterization of the

Corresponding Polymers. Naudin, Eric; Mehdi, Naiema El; Soucy, Chantal; Breau, Livain; Belanger, Daniel (Departement de Chimie and Laboratoire de Synthese Organique Appliquee Departement de Chimie, Universite du Quebec, Montreal, QC, H3C 3P8, Can.). Chemistry of Materials, 13(2), 634-642 (English) 2001. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

AB Several arylthiophene derivs. were synthesized using the Kumada cross-coupling reaction and electropolymd. at a platinum electrode to study the effect of the no. of thiophene unit and substitution pattern of the monomers on the spectroscopic and charge storage properties of the resulting polymers. The electrochem. oxidn. of these monomers showed a decrease of the anodic peak potential as the no. of thiophene units is increased: 1.2-1.4, 1.0, and 0.75 V for the mono-, bi-, and terthiophene, resp. The polymers having one Ph ring per thiophene unit displayed a larger band gap with the exception of poly-3-phenyl-thiophene, which showed a much smaller band gap. The lower band gap for the later can be explained by the higher reactivity of the cation radical (as evidenced by a high oxidn. potential) which led to a highly conjugated polymer. The cyclic voltammograms of the same polythiophene derivs. is characterized by a significant charge unbalance between the doping and undoping charge and most showed a limited cycle lifetime. On the other hand, poly-3-Ph thiophene, poly-3'-(1-naphthyl)-2,2':5',2''-terthiophene are the more stable and also show a relatively good balance between doping and undoping charge for both the p- and n-doping redox processes. The highest voltammetric charge d. evaluated by considering the wt. of monomer unit was recorded for poly-3-Ph thiophene despite the fact that some poly terthiophene derivs. have a lower Ph ring/thiophene unit ratio.

IT 331831-73-3P

(syntheses and electrochem. properties of thiophene derivs. polymers)

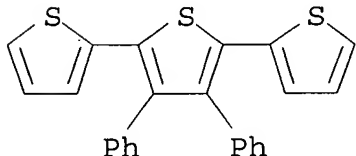
RN 331831-73-3 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-diphenyl-, homopolymer (9CI) (CA INDEX NAME).

CM 1

CRN 331831-69-7

CMF C24 H16 S3



IT 331831-73-3P

(syntheses and electrochem. properties of thiophene derivs. polymers)

L10 ANSWER 13 OF 52 ZCA COPYRIGHT 2003 ACS

133:135694 A comparative study of isomeric polydialkylterthiophenes with regular regiochemistry of substitution. Electrochemical synthesis. Dini, D.; Decker, F.; Andreani, F.; Salatelli, E.; Hapiot, P. (Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, D-14195, Germany). Polymer, 41(17), 6473-6480 (English) 2000. CODEN: POLMAG. ISSN: 0032-3861. Publisher: Elsevier Science Ltd..

AB In this paper is presented the study of electrodeposited polyterthiophenes with regular regiochem. of substitution. The starting monomers were 3',4' and 3,3"-didodecyl-2,2':5',2"-terthiophene. The presence of long alkylic chains improved the easiness of processability on the resulting polymers. Moreover, the sym. structure of the monomers allowed a regular regiochem. of substitution in the resulting polymers. Poly-didodecyl terthiophenes were electrochem. prepd. from a mixt. of acetonitrile and benzonitrile and then characterized with IR spectroscopy, mass spectrometry, profilometry and SEM. Formal oxidn. potential  $E_o$  and dimerization rate consts. were detd. for both monomers by means of ultrafast cyclic voltammetry (scan rate  $> 5000 \text{ V s}^{-1}$ ). The comparison of the results revealed the influence of substitution patterns in the detn. of the polymn. degree and the kinetic of polymer growth during the electrochem. polymn. The role of the monomers reactivities was then pointed out in the electrochem. synthesis.

IT 174509-57-0P

(electrochem. synthesis of 3',4'- and 3,3"-didodecyl-2,2':5',2"-terthiophenes)

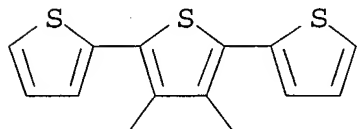
RN 174509-57-0 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-didodecyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 174509-55-8

CMF C36.H56 S3



Me-(CH<sub>2</sub>)<sub>11</sub> (CH<sub>2</sub>)<sub>11</sub>-Me

IT 174509-57-0P

(electrochem. synthesis of 3',4'- and 3,3"-didodecyl-2,2':5',2"-terthiophenes)

L10 ANSWER 14 OF 52 ZCA COPYRIGHT 2003 ACS

133:74420 .pi.-Conjugated ligand polymers entwined around copper centers. Vidal, Pierre-Louis; Divisia-Blohorn, Bernadette; Bidan, Gerard; Hazemann, Jean-Louis; Kern, Jean-Marc; Sauvage, Jean-Pierre (Laboratoire d'Electrochimie Moleculaire UMR 5819



CEA/CNRS/Universite J. Fourier Departement de Recherche Fondamentale sur la Matiere Condensee CEA Grenoble, Grenoble, 38054, Fr.). Chemistry--A European Journal, 6(9), 1663-1673 (English) 2000.

CODEN: CEUJED. ISSN: 0947-6539. Publisher: Wiley-VCH Verlag GmbH.

AB Conjugated polymers entwined around CuI with alternating .alpha.-quaterthienyl (poly[Cu(T2)2]) or 3',4',3'',4''-tetrahexyl-.alpha.-hexathienyl (poly[Cu(T3)2]) moieties and 1,10-phenanthroline complexing sites were prep'd. The 2,9-bis(oligothienyl)-1,10-phenanthroline precursor ligands were prep'd., then assembled by CuI templating to obtain the monomers, which were then subjected to electropolymerization. Poly[Cu(T2)2] shows sep. electroactivity for the Cu redox centers and the conjugated backbone, whereas the electroactivity for both moieties overlaps in the case of poly[Cu(T3)2]. An x-ray absorption study on these polymers in their reduced state at the Cu-K edge identifies, in both cases, four nitrogen atoms as the closest copper(I) neighbors. For poly[Cu(T2)2], the CuI environment is a distorted tetrahedron similar to a monomer model compound, but with a slightly higher no. of steric constraints. The CuI environment for poly[Cu(T3)2] is a less distorted tetrahedron with an unusually short CuI-N av. bond length. CuI removal in poly[Cu(T2)2] induces an irreversible collapse of the structure, whereas the reversibility of CuI binding is almost perfect for poly[Cu(T3)2], as the hexyl chains prevent irreversible gliding of the wires after copper removal. Combined electrochem. and resistance measurements reveal that the Cu centers in poly[Cu(T2)2] play the role of mech. support for the structure with no significant electronic interactions with the conjugated backbone, whereas in the case of poly[Cu(T3)2] copper centers contribute to the cond. of the structure.

IT 280136-05-2P

(prepn. of ligands and complex monomers and polythiophene-phenanthroline copper complex polymers and cond. and reversible demetallation of electroactive polymers)

RN 280136-05-2 ZCA

CN Copper(1+), bis[2,9-bis(3',4'-dihexyl[2,2':5',2''-terthiophen]-5-yl)-1,10-phenanthroline-.kappa.N1,.kappa.N10]-, (T-4)-, tetrafluoroborate(1-), homopolymer (9CI) (CA INDEX NAME)

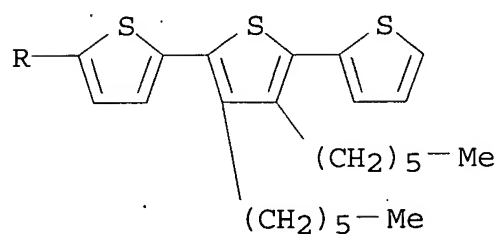
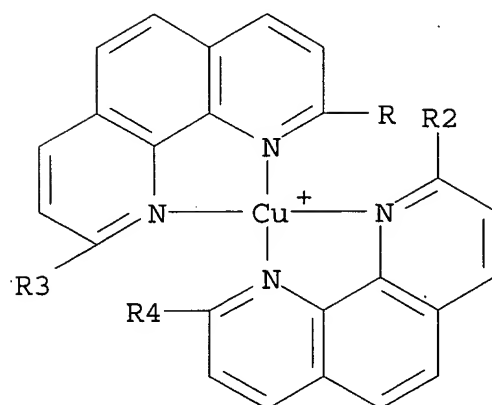
CM 1

CRN 280136-02-9

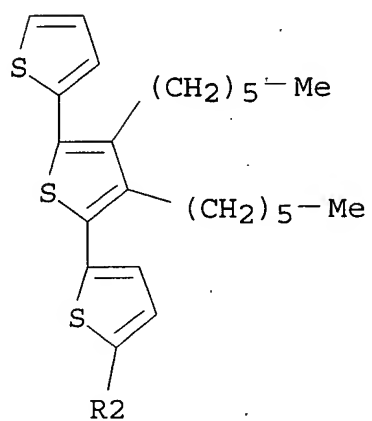
CMF C120 H136 Cu N4 S12

CCI CCS

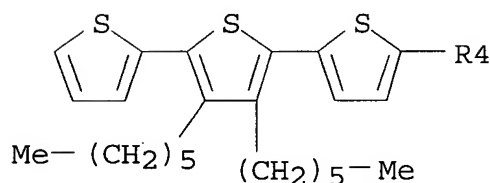
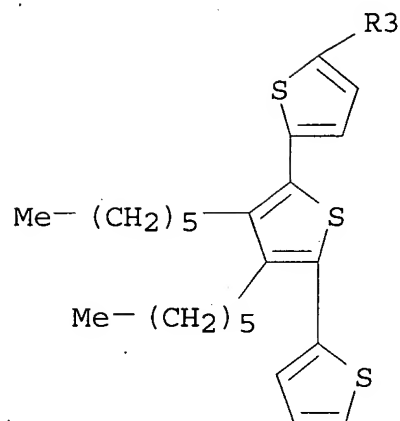
PAGE 1-A



PAGE 2-A



PAGE 3-A

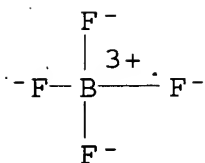


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



IT 280136-05-2P

(prepn. of ligands and complex monomers and polythiophene-phenanthroline copper complex polymers and cond. and reversible demetallation of electroactive polymers)

L10 ANSWER 15 OF 52 ZCA COPYRIGHT 2003 ACS

132:300027 Polythiophene S,S dioxides: an investigation on electrochemical doping. Arbizzani, Catia; Mastragostino, Marina; Soavi, Francesca (Department of Chemistry "G. Ciamician", University of Bologna, Bologna, I-40126, Italy). Electrochimica Acta, 45(14),

2273-2278 (English) 2000. CODEN: ELCAAV. ISSN: 0013-4686.

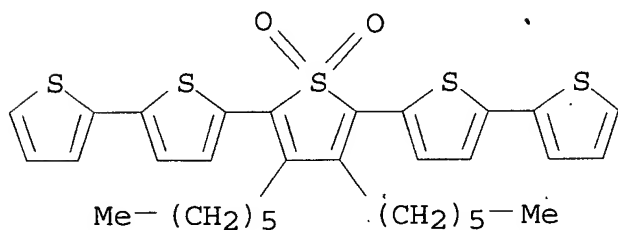
Publisher: Elsevier Science Ltd..

- AB A new strategy for functionalizing oligothiophenes is the transformation of the thienyl sulfurs into the corresponding S,S dioxides, with the effect of lowering the LUMO energy without significantly affecting the HOMO one. From a quinquethiophene S,S dioxide deriv., a polymer (poly(3'',4''-dihexyl-2,2':5',2'':5'',2''':5''',2''''-quinquethiophene 1'',1''-dioxide) , pQTDO) which can be reversibly n-doped at not very neg. potentials still maintaining the property of being p-doped at moderate potential values was electrosynthesized. There is, however, a great difference in the ability to store charge of the polymer's p- and n-doped forms: a great amt. of injected neg. charge irreversibly modifies the structure of pQTDO.
- IT **227464-66-6P**, Poly(3'',4''-dihexyl-2,2':5',2'':5'',2''':5''',2''''-quinquethiophene 1'',1''-dioxide) (electrochem. prepn. and electrochem. doping)
- RN 227464-66-6 ZCA
- CN 2,2':5',2'':5'',2''':5''',2''''-Quinquethiophene, 3'',4''-dihexyl-, 1'',1''-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 227464-62-2

CMF C32 H36 O2 S5



- IT **227464-66-6P**, Poly(3'',4''-dihexyl-2,2':5',2'':5'',2''':5''',2''''-quinquethiophene 1'',1''-dioxide) (electrochem. prepn. and electrochem. doping)
- L10 ANSWER 16 OF 52 ZCA COPYRIGHT 2003 ACS
- 132:223221 Synthesis and characterization of neutral newly substituted polyalkylthiophenes. Andreani, F.; Salatelli, E.; Lanzi, M.; Bertinelli, F.; Fichera, A. M.; Gazzano, M. (Dipartimento di Chimica Industriale e dei Materiali, University of Bologna, Bologna, 40136, Italy). Polymer, 41(9), 3147-3157 (English) 2000. CODEN: POLMAG. ISSN: 0032-3861. Publisher: Elsevier Science Ltd..
- AB In this work, two newly substituted polyalkylthiophenes, poly(3,4-dihexyl-2,2'-bithiophene) and its didodecyl analog have been prepd. in order to compare their properties with those of the regioisomeric poly(3-alkylthiophene)s contg. the same amt. of head-to-tail configuration (conventional PATs). Remarkable differences between the material characteristics of these two kinds

of polyalkylthiophene have been obsd., thus enabling us to elucidate the side chains effects exclusively attributable to the difference between the side chains distribution along the polythiophene backbone. In the neutral bulk state, compared to that of the conventional PATs, the polymers prepd. for this study have been found more thermostable materials exhibiting higher flexibility and less ordered (in the crystallog. sense) mol. assemblies, still able to afford an av. conjugation length as long as that of the conventional PATs, but varying between wider limits. This seems to be closely connected with a lower degree of side chains interaction and/or the high proportion (50%) of unsubstituted thiophene rings. Based on these effects of mol. structure on the material properties at room temp., we have anticipated in the novel polymers, at higher temps., the possibility of weaker thermochromism and better cond. stability than in their regioisomeric conventional PATs.

IT 261379-10-6P 261379-11-7P

(synthesis of neutral substituted polyalkylthiophenes)

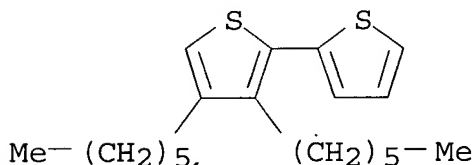
RN 261379-10-6 ZCA

CN 2,2'-Bithiophene, 3,4-dihexyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 261379-06-0

CMF C20 H30 S2



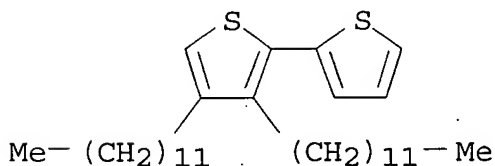
RN 261379-11-7 ZCA

CN 2,2'-Bithiophene, 3,4-didodecyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 261379-07-1

CMF C32 H54 S2



IT 261379-10-6P 261379-11-7P

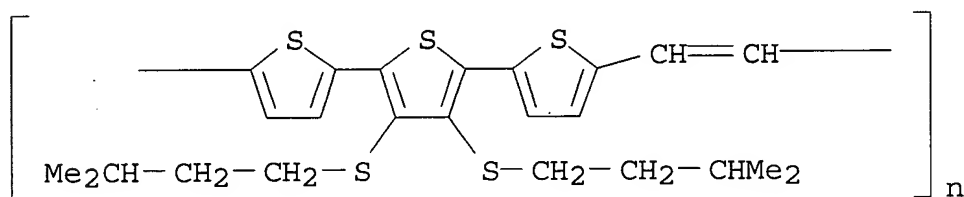
(synthesis of neutral substituted polyalkylthiophenes)

L10 ANSWER 17 OF 52 ZCA COPYRIGHT 2003 ACS

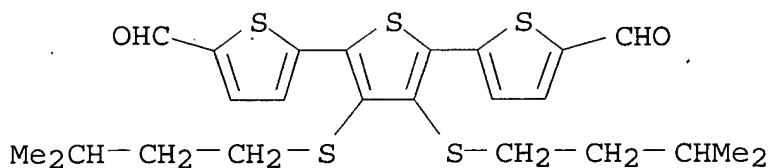
132:93744 Synthesis and characterization of new copolymers of thiophene

and vinylene: poly(thienylenevinylene)s and poly(terthienylenevinylene)s with thioether side chains. Goldoni, Francesca; Janssen, Rene A. J.; Meijer, E. W. (Laboratory of Macromolecular and Organic Chemistry, Eindhoven University of Technology, Eindhoven, 5600 MB, Neth.). Journal of Polymer Science, Part A: Polymer Chemistry, 37(24), 4629-4639 (English) 1999. CODEN: JPACEC. ISSN: 0887-624X. Publisher: John Wiley & Sons, Inc..

- AB Poly[3,4-bis(3-methylbutylthio)thienylenevinylene], poly[3,4-bis-(S)-(2-methylbutylthio)thienylenevinylene], poly[3',4'-bis(3-methylbutylthio)-2,2':5',2''-terthienylene-5,5''-vinylene], and poly{3',4'-bis-(S)-[2-methylbutylthio]-2,2':5',2''-terthienylene-5,5''-vinylene} were synthesized. The thiophene monomers and trimers were formylated to give the corresponding dialdehydes. The dialdehydes were reductively polymd. using a McMurry coupling. The polymers are characterized by GPC, optical spectroscopy (FT-IR, UV-vis, CD spectroscopy and photoluminescence) and by proton and carbon NMR spectroscopy. The polymers are sol. in common org. solvents, such as THF, chloroform, toluene, benzene and 1,2-dichlorobenzene. The solvatochromism and thermochromism of the polymers in soln. are studied, while the optical activity of the polymers is used to study supramol. aggregation.
- IT 255044-86-1P, Poly[3',4'-bis(3-methylbutylthio)-2,2':5',2''-terthiophene-5,5''-vinylene] 255044-87-2P, 3',4'-Bis(3-methylbutylthio)-2,2':5',2''-terthiophene-5,5''-dialdehyde homopolymer 255044-88-3P, 3',4'-Bis[2-(S)-methylbutylthio]-2,2':5',2''-terthiophene-5,5''-dialdehyde homopolymer 255044-89-4P, Poly{3',4'-bis[2-(S)methylbutylthio]-2,2':5',2''-terthiophene-5,5''-vinylene} (prepn. and optical activity and solvato- and thermo-chromism of poly(thienylenevinylene)s and poly(terthienylenevinylene)s with thioether side chains)
- RN 255044-86-1 ZCA
- CN Poly[[3',4'-bis[(3-methylbutyl)thio][2,2':5',2''-terthiophene]-5,5''-diyl]-1,2-ethenediyl] (9CI) (CA INDEX NAME)



- RN 255044-87-2 ZCA
- CN [2,2':5',2''-Terthiophene]-5,5''-dicarboxaldehyde, 3',4'-bis[(3-methylbutyl)thio]-, homopolymer (9CI) (CA INDEX NAME)
- CM 1
- CRN 255044-84-9
- CMF C24 H28 O2 S5

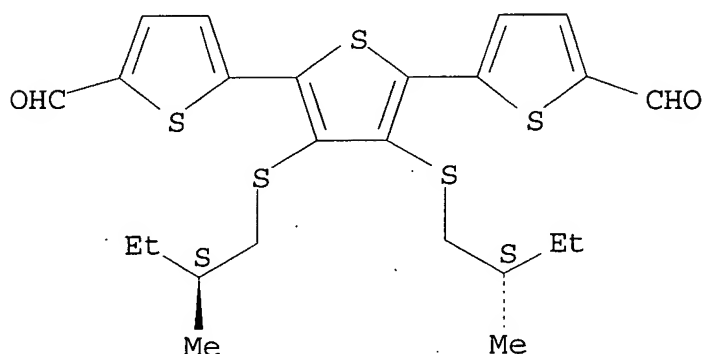


RN 255044-88-3 ZCA  
 CN [2,2':5',2''-Terthiophene]-5,5''-dicarboxaldehyde,  
 3',4'-bis[[(2S)-2-methylbutyl]thio]-, homopolymer (9CI) (CA INDEX  
 NAME)

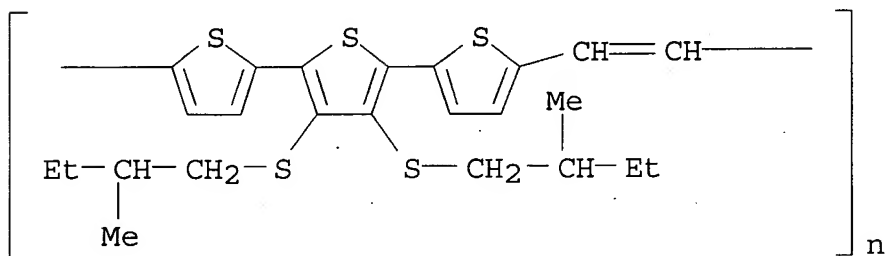
CM 1

CRN 255044-85-0  
 CMF C24 H28 O2 S5

Absolute stereochemistry.



RN 255044-89-4 ZCA  
 CN Poly[[3',4'-bis[[(2S)-2-methylbutyl]thio][2,2':5',2''-terthiophene]-  
 5,5''-diyl]-1,2-ethenediyl] (9CI) (CA INDEX NAME)



IT 255044-86-1P, Poly[3',4'-bis(3-methylbutylthio)-2,2':  
 5',2''-terthiophene-5,5''-vinylene] 255044-87-2P,  
 3',4'-Bis(3-methylbutylthio)-2,2':5',2''-terthiophene-5,5''-  
 dialdehyde homopolymer 255044-88-3P, 3',4'-Bis[2-(S)-  
 methylbutylthio]-2,2':5',2''-terthiophene-5,5''-dialdehyde  
 homopolymer 255044-89-4P, Poly{3',4'-bis[2-

(S)methylbutylthio]-2,2' : 5',2''-terthiophene-5,5''-vinylene}  
(prepn. and optical activity and solvato- and thermo-chromism of  
poly(thienylenevinylene)s and poly(terthienylenevinylene)s with  
thioether side chains)

L10 ANSWER 18 OF 52 ZCA COPYRIGHT 2003 ACS

132:56088 Comparative Study of Isomeric Polyalkylterthiophenes with  
Regular Regiochemistry of Substitution: Characterization of  
Electrochemical Doping Process. Dini, Danilo; Decker, Franco;  
Zotti, Gianni; Schiavon, Gilberto; Zecchin, Sandro; Andreani,  
Franco; Salatelli, Elisabetta (Fritz-Haber-Institut der  
Max-Planck-Gesellschaft, Berlin, D-14195, Germany). Chemistry of  
Materials, 11(12), 3484-3489 (English) 1999. CODEN: CMATEX. ISSN:  
0897-4756. Publisher: American Chemical Society.

AB The authors present a systematic study of the effect of the  
substitution pattern in the starting monomers on the resulting  
properties of some electrodeposited polydidodecylterthiophenes. The  
compared characterization of p-doping processes in regioregular  
electropolymd. poly-3',4'- and 3,3''-didodecyl-2,2':5',2''-  
terthiophene is here reported for the 1st time. The in situ  
variations of the optical, magnetic, and elec. transport properties  
were measured and correlated with the effects assocd. to the  
substituent position. An important result was the verification of  
absorption fine structures in the wavelength range  $500 < \lambda < 620$  nm for the optical spectra of the electropolymd.  
polydidodecylterthiophenes thus confirming the typical features of  
regioregular polymers. Visible spectra and cyclic voltammetries  
verified that poly-3,3''-didodecyl-2,2':5',2''-terthiophene  
possessed a more effective electronic conjugation with respect of  
the other isomer poly-3',4'-didodecyl-2,2':5',2''-terthiophene.  
However, the latter polymer showed a higher value of the electronic  
cond. (33 vs. 21 S cm<sup>-1</sup>). Such differences are discussed in terms  
of the effect of the substituent position on the polymers packing  
and the sepn. between chains.

IT 174509-57-0, Poly-3',4'-didodecyl-2,2':5',2''-terthiophene  
(comparative study of isomeric polyalkylterthiophenes with  
regular regiochem. of substitution: characterization of  
electrochem. doping process)

RN 174509-57-0 ZCA

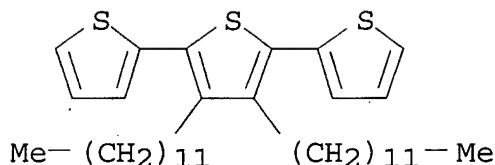
CN 2,2':5',2''-Terthiophene, 3',4'-didodecyl-, homopolymer (9CI) (CA  
INDEX NAME)

CM 1

CRN 174509-55-8

CMF C36 H56 S3





IT 174509-57-0, Poly-3',4'-didodecyl-2,2':5',2''-terthiophene  
(comparative study of isomeric polyalkylterthiophenes with  
regular regiochem. of substitution: characterization of  
electrochem. doping process)

L10 ANSWER 19 OF 52 ZCA COPYRIGHT 2003 ACS

131:351903 Controlling the Electronic Properties of Polythiophene  
through the Insertion of Nonaromatic Thienyl S,S-dioxide Units.  
Barbarella, G.; Favaretto, L.; Sotgiu, G.; Zambianchi, M.;  
Arbizzani, C.; Bongini, A.; Mastragostino, M. (Consiglio Nazionale  
Ricerche, I.Co.C.E.A., Bologna, 40129, Italy). Chemistry of  
Materials, 11(9), 2533-2541 (English) 1999. CODEN: CMATEX. ISSN:  
0897-4756. Publisher: American Chemical Society.

AB A new class of thiophene-based polymers characterized by the  
presence of one nonarom. thienyl S,S-dioxide moiety (O) to every  
two, four, and six arom. thienyl units (T) was prepd. from the newly  
synthesized precursors TOT, TTOTT, and TTTOTTT, and electrochem.  
characterized. The polymers displayed remarkably greater electron  
affinities than that of polythiophene and could be reversibly  
n-doped at moderate potentials, while still maintaining the property  
of also being p-doped at moderate potential values. All polymers  
were characterized by good p-doping/undoping cyclability, while at  
least four arom. units to every nonarom. one were needed to ensure  
good n-doping/undoping cyclability. ZINDO/S//PM3 calcns. on TOT,  
TTOTT, and TTTOTTT and on (TOT)<sub>3</sub> and (TTOTT)<sub>3</sub>, as models for the  
corresponding polymers, showed that the presence of the nonarom.  
units does not affect the .pi.,.pi.\* character of the frontier  
orbitals but decreases their energy, in particular that of the LUMO.  
The calcns. allow the cyclability properties of the polymers in the  
p- and n-doping domains to be rationalized in terms of  
delocalization of the electronic charge of p- and n-type charge  
carriers over the arom. units.

IT 227464-65-5P 227464-66-6P 250379-98-7P  
(prepn. and properties of)

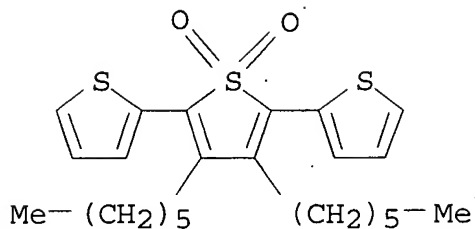
RN 227464-65-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, 1',1'-dioxide, homopolymer  
(9CI) (CA INDEX NAME)

CM 1

CRN 227464-61-1

CMF C24 H32 O2 S3



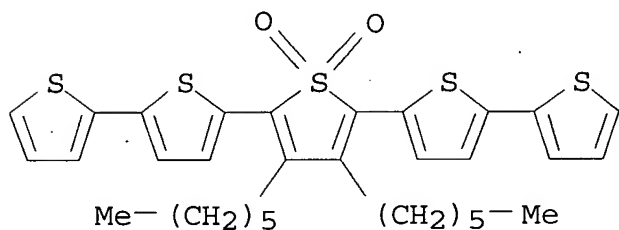
RN 227464-66-6 ZCA

CN 2,2':5',2'':5'',2''':5'''-Quinquethiophene, 3'',4''-dihexyl-, 1'',1''-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 227464-62-2

CMF C32 H36 O2 S5



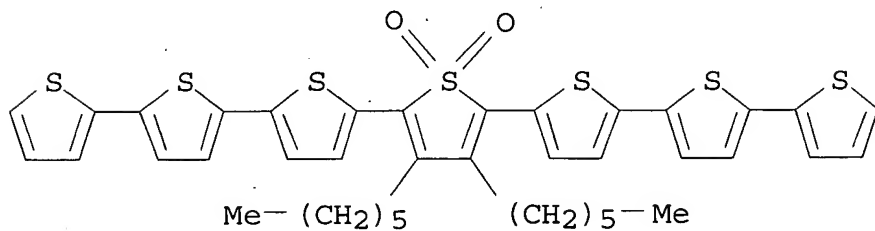
RN 250379-98-7 ZCA

CN 2,2':5',2'':5'',2''':5''',2''':5''',2''':5'''-Septithiophene, 3''',4'''-dihexyl-, 1''',1'''-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 250379-97-6

CMF C40 H40 O2 S7



IT 227464-65-5P 227464-66-6P 250379-98-7P  
(prepn. and properties of)

L10 ANSWER 20 OF 52 ZCA COPYRIGHT 2003 ACS  
131:205991 Electrochemical impedance spectroscopy of

polyalkylterthiophenes. Tarola, Alessandro; Dini, Danilo; Salatelli, Elisabetta; Andreani, Franco; Decker, Franco (Department of Chemistry, University of Rome "La Sapienza", Rome, 00185, Italy). *Electrochimica Acta*, 44(24), 4189-4193 (English) 1999. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB The electrochem. impedance spectroscopy investigation of two isomer polyalkylterthiophenes, namely poly-3',4'- and 3,3'-didodecylterthiophene was carried out at different stages of polymers oxidn. In the potential range 0.4 .ltoreq. E .ltoreq. 0.7 V vs. Ag/AgNO<sub>3</sub> the ionic resistance R<sub>ion</sub> assocd. with the insertion in the polymer structure of the doping species PF<sub>6</sub><sup>-</sup> V, decreases for poly(3,3"-didodecylterthiophene) with increasing potential whereas the onset of a blocking process occurs when E > 0.7 V vs. Ag/AgNO<sub>3</sub>. Such results were compared with the corresponding in-situ variations of the cond. at different stages of poly(3,3"-didodecylterthiophene) oxidn. The electrochem. impedance spectroscopy characterization of the isomer poly(3',4'-didodecylterthiophene) could not be fully accomplished because of the scarce wettability of this system in the electrolyte solvent.

IT 174509-57-0

(electrochem. impedance spectroscopy of polyalkylterthiophenes)

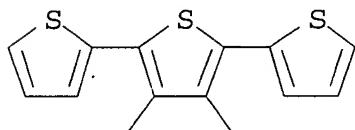
RN 174509-57-0 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-didodecyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 174509-55-8

CMF C36 H56 S3



Me-(CH<sub>2</sub>)<sub>11</sub> (CH<sub>2</sub>)<sub>11</sub>-Me

IT 174509-57-0

(electrochem. impedance spectroscopy of polyalkylterthiophenes)

L10 ANSWER 21 OF 52 ZCA COPYRIGHT 2003 ACS

131:185325 New n-dopable thiophene based polymers. Bongini, A.; Barbarella, G.; Favaretto, L.; Sotgiu, G.; Zambianchi, M.; Mastragostino, M.; Arbizzani, C.; Soavi, F. (Dipartimento di Chimica "G. Ciamician", Universita, Bologna, 40126, Italy). *Synthetic Metals*, 101(1-3), 13-14 (English) 1999. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A..

AB New conjugated polymers contg. variable amts. of thienyl and thienyl-S,S-dioxide units have been prepd. by chem. or electrochem. polymn. of the appropriate substrates. The presence of the thienyl, S-dioxide units leads to the decrease of the LUMO energies with respect to those of the 'all thienyl' counterparts. Electrochem.

and spectroelectrochem. data of n-doping of these materials are reported.

IT 227464-64-4P 227464-65-5P

(n-dopable thiophene-based polymers)

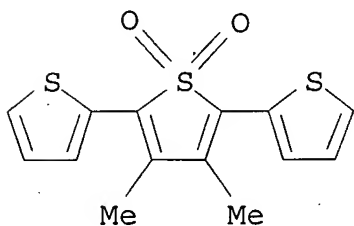
RN 227464-64-4 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dimethyl-, 1',1'-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 227464-60-0

CMF C14 H12 O2 S3



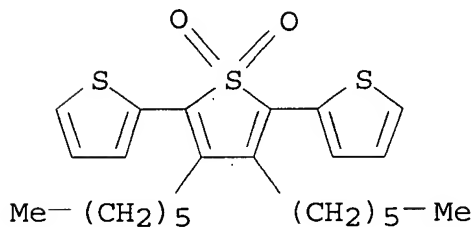
RN 227464-65-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, 1',1'-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 227464-61-1

CMF C24 H32 O2 S3



IT 227464-64-4P 227464-65-5P

(n-dopable thiophene-based polymers)

L10 ANSWER 22 OF 52 ZCA COPYRIGHT 2003 ACS

131:170709 Poly(3',4'-[bis(N,N'-ethyloxamyl)]terthiophene): a new functionalized conductive polymer with tunable pendent ethyloxamyl substituents. Mangeney, Claire; Lacroix, Jean-Christophe; Chane-Ching, Kathleen I.; Jouini, Mohamed; Aeiyaich, Salah; Lacaze, Pierre-Camille (Institut de Topologie et de Dynamique des Systemes de l'Universite Paris 7 - Denis Diderot, CNRS-UPRESA 7086, Paris, 75005, Fr.). Physical Chemistry Chemical Physics, 1(11), 2755-2760 (English) 1999. CODEN: PPCPFQ. ISSN: 1463-9076. Publisher: Royal

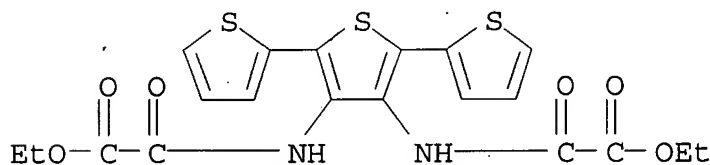
Society of Chemistry.

- AB The electrosynthesis and the properties of a new functionalized polythiophene poly[3',4'-[bis(ethoxyoxamylamino)]terthiophene] possessing a complexing cavity attached to one in three thiophene units are studied. The polymer has been characterized by means of several spectroscopic techniques (IR, Raman, XPS). It exhibits the usual behavior of the polythiophene class of materials. Furthermore, it can be chem. modified, replacement of ester by amide groups in the solid state being evidenced by XPS and IR spectroscopy. The influence of the switching reaction of the polythiophene backbone upon the microscopic properties of the pendent ethoxyoxamylamino groups is studied. IR spectroscopy and mol. modeling indicate that the .pi.-electron d. and the size of the complexing active center depend on the applied potential.
- IT 239089-99-7DP, reaction products with ammonia  
(prepn. and properties of functionalized polythiophene deriv.)
- RN 239089-99-7 ZCA
- CN Acetic acid, 2,2'-([2,2':5',2''-terthiophene]-3',4'-diylldiimino)bis[2-oxo-, diethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 239089-98-6

CMF C20 H18 N2 O6 S3



- IT 239089-99-7DP, reaction products with ammonia  
239089-99-7DP, reaction products with ammonia  
(prepn. and properties of functionalized polythiophene deriv.)

L10 ANSWER 23 OF 52 ZCA COPYRIGHT 2003 ACS

131:51021 Polyterthiophene and polypentathiophene S,S-dioxides: new n-dopable polymers. Arbizzani, Catia; Bongini, Alessandro; Barbarella, Giovanna; Mastragostino, Marina (Dept. of Chemistry, University of Bologna, Bologna, 40126, Italy). Proceedings - Electrochemical Society, 98-26 (Molecular Functions of Electroactive Thin Films), 105-113 (English) 1999. CODEN: PESODO. ISSN: 0161-6374. Publisher: Electrochemical Society.

- AB The current interest in polymers that reversibly undergo both p- and n-doping lies in their potential application in advanced sym. electrochem. devices. Of the different approaches followed in mol. design, the lowering of the energy gap proved very fruitful: a large variety of monomers and oligomers were synthesized starting from thiophene units so as to tune the HOMO and LUMO energies. The authors have recently reported a new strategy for functionalizing

oligothiophenes consisting in the chem. transformation of the thienyl sulfurs into the corresponding S,S-dioxides and here are reported and discussed the electrochem. and optical characterization of polymers chem. and electrochem. synthesized starting from oligothiophene S,S dioxides.

IT 227464-65-5P

(chem. and electrochem. prepn. and cyclic voltammetry and electronic spectra of)

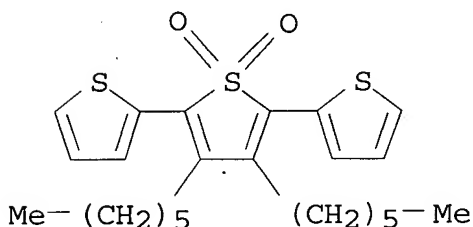
RN 227464-65-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, 1',1'-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 227464-61-1

CMF C24 H32 O2 S3



IT 227464-66-6P

(electrochem. prepn. and cyclic voltammetry and electronic spectra of)

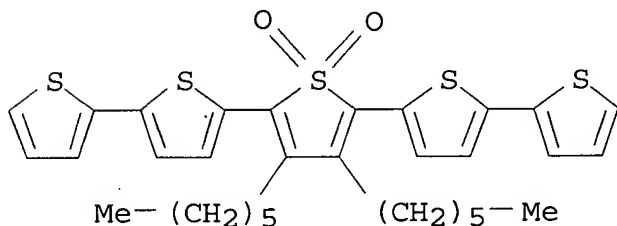
RN 227464-66-6 ZCA

CN 2,2':5',2'':5'',2''':5''',2''''-Quinquethiophene, 3'',4''-dihexyl-, 1'',1''-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 227464-62-2

CMF C32 H36 O2 S5



IT 227464-64-4P

(electrochem. prepn. and cyclic voltammetry of)

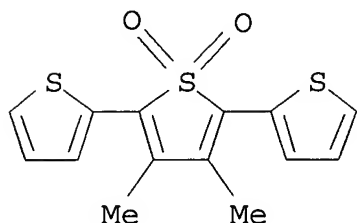
RN 227464-64-4 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dimethyl-, 1',1'-dioxide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 227464-60-0

CMF C14 H12 O2 S3



IT 227464-65-5P

(chem. and electrochem. prepn. and cyclic voltammetry and electronic spectra of)

IT 227464-66-6P

(electrochem. prepn. and cyclic voltammetry and electronic spectra of)

IT 227464-64-4P

(electrochem. prepn. and cyclic voltammetry of)

L10 ANSWER 24 OF 52 ZCA COPYRIGHT 2003 ACS

131:32236 Conjugated Ladder Polymers Containing Thienylene Units.

Forster, Michael; Annan, Kenneth O.; Scherf, Ullrich

(Max-Planck-Institut fuer Polymerforschung, Mainz, D-55128, Germany). Macromolecules, 32(9), 3159-3162 (English) 1999. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

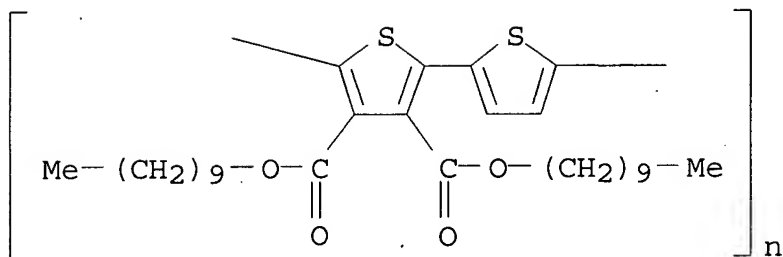
AB An attempt was made to obtain a conjugated ladder polymer by cyclization of poly(p-phenylene-thienylene) contg. alternating phenylene and thienylene moieties, and a ladder polymer composed exclusively of thienylene building blocks. The first polymer was obtained by Stille-type aryl-heteroaryl cross coupling of 1,5-bis(tributylstannyl)thiophene with 2,5-dibromo-1,4-bis(4'-decylbenzoyl)benzene, followed by a 2-step process comprising redn. and cyclization. The structure of the obtained double-stranded ladder polymers with decylphenyl side groups was confirmed by NMR. Polymn. of 1,5-bis(tributylstannyl)thiophene with 2,5-dibromo-3,4-bis(4'-decylbenzoyl)thiophene gave a thiophene polymer, which cyclized only partially, apparently due to inherent steric strain of the structure.

IT 226945-68-2DP, reduced, cyclized

(attempted prepn. of conjugated ladder polymers contg. thienylene units)

RN 226945-68-2 ZCA

CN Poly[3,4-bis[(decyloxy)carbonyl][2,2'-bithiophene]-5,5'-diyl] (9CI)  
(CA INDEX NAME)

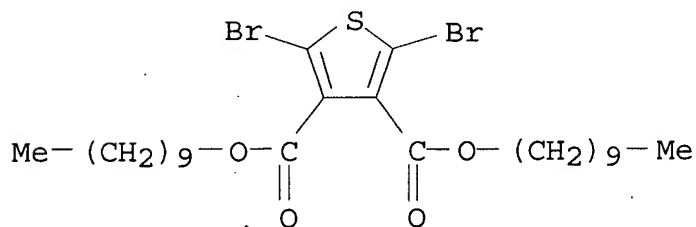


IT 226945-64-8P 226945-68-2DP, reduced, cyclized  
 (prepn. and cyclization of; prepn. of conjugated ladder polymers  
 contg. thienylene units)  
 RN 226945-64-8 ZCA  
 CN 3,4-Thiophenedicarboxylic acid, 2,5-dibromo-, didecyl ester, polymer  
 with 2,5-thiophenediylbis[tributylstannane] (9CI) (CA INDEX NAME)

CM 1

CRN 226945-63-7

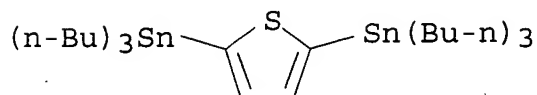
CMF C26 H42 Br2 O4 S



CM 2

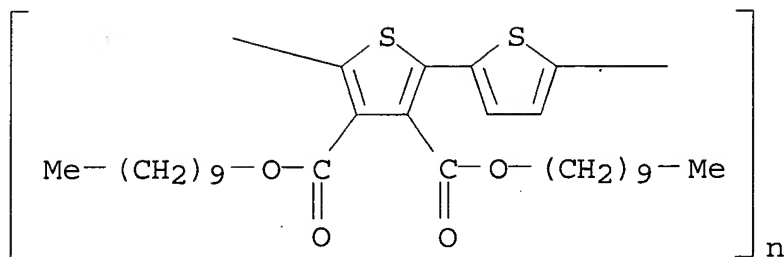
CRN 145483-63-2

CMF C28 H56 S Sn2



RN 226945-68-2 ZCA  
 CN Poly[3,4-bis[(decyloxy)carbonyl][2,2'-bithiophene]-5,5'-diyl] (9CI)  
 (CA INDEX NAME)





- IT 226945-68-2DP, reduced, cyclized  
(attempted prepn. of conjugated ladder polymers contg. thienylene units)
- IT 226945-64-8P 226945-68-2DP, reduced, cyclized  
(prepn. and cyclization of; prepn. of conjugated ladder polymers contg. thienylene units)

L10 ANSWER 25 OF 52 ZCA COPYRIGHT 2003 ACS

130:288628 Structural, spectroscopic and photophysical analyses of substituted terthiophenes and quinquethiophenes as well as their corresponding polyesters. DiCesare, Nicolas; Belletete, Michel; Donat-Bouillud, Anne; Leclerc, Mario; Durocher, Gilles (Departement de Chimie, Laboratoire de Photophysique Moleculaire, Universite de Montreal, Montreal, QC, H3C 3J7, Can.). Journal of Luminescence, 81(2), 111-125 (English) 1999. CODEN: JLUMA8. ISSN: 0022-2313. Publisher: Elsevier Science B.V..

AB The authors present spectroscopic and photophys. results on oligothiophenes (trimers and pentamers) substituted with alkyl side chains as well as on the resp. mols. incorporated in polyesters. The same oligothiophenes having two different electron acceptor groups, the carbonyl chloride and the acid substituent, at each end of the mols. also were studied. These mols. provide a better correlation with their corresponding polyesters. Absorption and fluorescence spectra in soln. were used to discuss the effect of the substitution as well as the length of the thiophene chain on the mol. conformation. Semiempirical calcns. (AM1 and PM3) also were performed to obtain the torsional potentials of the oligomers. Consequences of the conformational changes on the spectral and photophys. properties (fluorescence quantum yields, lifetimes and decay consts.) of the various oligothiophenes and polyesters were examd. Insertion of two alkyl chains on the central thiophene ring creates an important mol. twisting in the mols. The length of the thiophene chain as well as the presence of end-substituents do not significantly influence the ground state mol. conformation. In the excited state, all mols. relax to more planar conformations. The fluorescence quantum yields and lifetimes are smaller for the alkyl-substituted mols. (without end-substituents) giving rise to higher values of the nonradiative decay consts. compared to those of the unsubstituted mols. This behavior might involve a decrease of the singlet-triplet energy gap for the twisted mols. which could enhance the intersystem crossing process. The incorporation of



IT 189190-04-3 189190-17-8

(structural, spectroscopic and photophys. analyses of substituted terthiophenes and quinquethiophenes as well as corresponding polyesters)

L10 ANSWER 26 OF 52 ZCA COPYRIGHT 2003 ACS

130:229095 EQCM characterization of some substituted polyterthiophenes.

Dini, D.; Decker, F.; Zotti, G.; Schiavon, G.; Zecchin, S.; Andreani, F.; Salatelli, E.; Lanzi, M. (Department of Chemistry, University of Rome "La Sapienza", Rome, 00185, Italy).

Electrochimica Acta, 44(12), 1911-1917 (English) 1999. CODEN:

ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB The electrochem. growth of polyalkylterthiophenes has been monitored in situ with the Electrochem. Quartz Crystal Microbalance (EQCM). Potential controlled synthesis of poly(3',4'-didodecylterthiophene) (poly-3'4'-DDTT) and poly(3',3''-didodecylterthiophene) (poly-33"-DDTT) revealed an unexpected cathodic pptn. following the anodic deposition. From the anal. of the exptl. data we obtained an excellent fit of the cathodic pptn. curves with a first-order nucleation law. A correlation between substitution pattern of the starting monomers and the deposition kinetic of the resulting polymers was found. Factors controlling the cathodic deposition of the Poly-DDTTs didn't depend on the presence of a parent phase on the electrode. Finally, long time-scale expts. (500 s) with EQCM during potentiostatic synthesis of Poly-DDTTs revealed an evolution of the deposited mass with peculiar features of a process under diffusion control.

IT 174509-57-0

(electrochem. growth of)

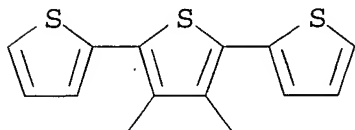
RN 174509-57-0 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-didodecyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 174509-55-8

CMF C36 H56 S3



Me-(CH<sub>2</sub>)<sub>11</sub> (CH<sub>2</sub>)<sub>11</sub>-Me

IT 174509-57-0

(electrochem. growth of)

L10 ANSWER 27 OF 52 ZCA COPYRIGHT 2003 ACS

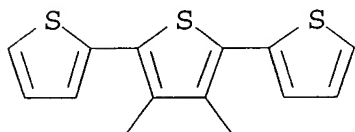
130:4566 Electrochemical growth of polyalkylthiophenes. In situ characterization of deposition processes. Dini, Danilo; Decker, Franco; Zotti, Gianni (Dipartimento di Chimica, Universita' "La

Sapienza", Rome, 00185, Italy). Electrochemical and Solid-State Letters, 1(5), 217-219 (English) 1998. CODEN: ESLEF6. ISSN: 1099-0062. Publisher: Electrochemical Society.

- AB The electrochem. growth of a poly(alkylthiophene) poly(3',4'-didodecylterthiophene) was followed in situ with the electrochem. quartz crystal microbalance and probe beam deflection techniques. The simultaneous anal. of mass and deflection angle variations allowed the detection of novel phenomena during the deposition process of the poly(alkylthiophene). The obsd. anomalies were explained in terms of cathodic pptn. involving neutral short-chain oligomeric species. Such results introduce new perspectives for the study of polymer electrodeposition mechanisms.
- IT **174509-57-0P**, Poly(3',4'-didodecyl-..alpha..-terthiophene) (in situ characterization of deposition processes of polyalkylthiophenes)
- RN 174509-57-0 ZCA
- CN 2,2':5',2''-Terthiophene, 3',4'-didodecyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 174509-55-8  
CMF C36 H56 S3



Me-(CH<sub>2</sub>)<sub>11</sub> (CH<sub>2</sub>)<sub>11</sub>-Me

- IT **174509-57-0P**, Poly(3',4'-didodecyl-..alpha..-terthiophene) (in situ characterization of deposition processes of polyalkylthiophenes)
- L10 ANSWER 28 OF 52 ZCA COPYRIGHT 2003 ACS  
129:337354 Light emission from electroluminescent Langmuir-Blodgett films of a polyester derived from oligothiophene. Goldenberg, L. M.; Leclerc, M.; Donat-Bouillud, A.; Pearson, C.; Petty, M. C. (Institute of Chemical Physics in Chernogolovka, Russian Academy of Science, Chernogolovka, 142432, Russia). Thin Solid Films, 327-329, 715-717 (English) 1998. CODEN: THSFAP. ISSN: 0040-6090.. Publisher: Elsevier Science S.A..
- AB Electroluminescent devices using Z-type Langmuir-Blodgett multilayer films of poly(hexaethyleneglycol-3'',4''-dihexyl-2,2';5',2'';5'',2''';5''',2''''-pentathiophene-5,5''''-dicarboxylate) (PPOE6) as the active region were fabricated. The org. material was incorporated in a sandwich structure between In Sn oxide (ITO) and Al electrodes. Diode-like characteristics were obsd., with a power law relation between current and voltage indicative of charge injection at the contacts. Probably the recombination of electrons and holes (injected at the Al and ITO

contacts, resp.) was responsible for the electroluminescent effect. The threshold voltage for the generation of yellow light (visible in a darkened room) was .apprx.4 V Using a calibrated photodiode to measure the optical output power, a quantum efficiency of the order of 1 .times. 10-2% was calcd.

IT 196800-70-1 196800-72-3

(light emission from electroluminescent Langmuir-Blodgett films of polyester derived from oligothiophene)

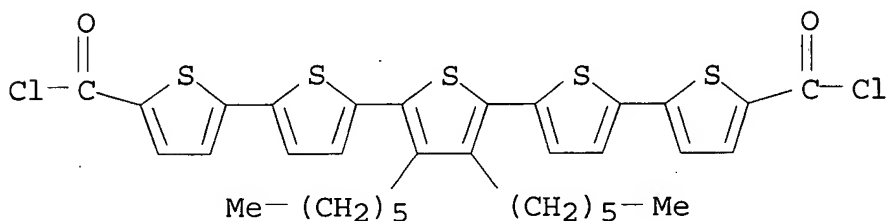
RN 196800-70-1 ZCA

CN [2,2':5',2'':5'',2''':5''',2''''-Quinquethiophene]-5,5''''-dicarbonyl dichloride, 3'',4''-dihexyl-, polymer with 3,6,9,12,15-pentaoxaheptadecane-1,17-diol (9CI) (CA INDEX NAME)

CM 1

CRN 189190-14-5

CMF C34 H34 C12 O2 S5

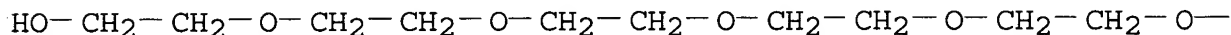


CM 2

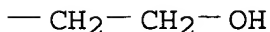
CRN 2615-15-8

CMF C12 H26 07

PAGE 1-A



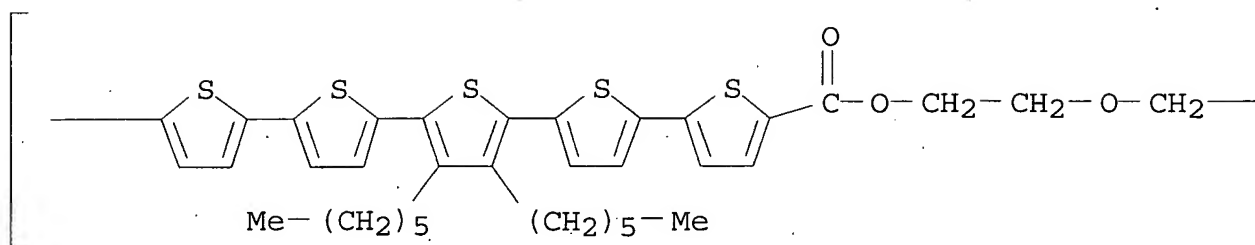
PAGE 1-B



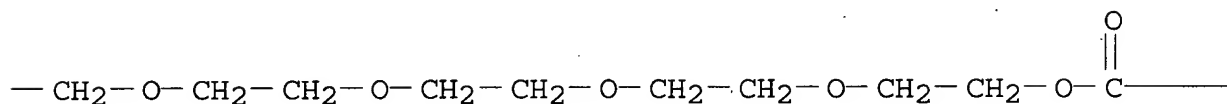
RN 196800-72-3 ZCA

CN Poly[(3'',4''-dihexyl[2,2':5',2'':5'',2''':5''',2''''-quinquethiophene]-5,5''''-diyl)carbonyloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxycarbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



PAGE 1-C

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n

IT 196800-70-1 196800-72-3

(light emission from electroluminescent Langmuir-Blodgett films of polyester derived from oligothiophene)

L10 ANSWER 29 OF 52 ZCA COPYRIGHT 2003 ACS

128:236803 Nonlinear optical properties of novel low-bandgap polythiophenes. Schrof, W.; Rozouvan, S.; Hartmann, T.; Mohwald, H.; Belov, V.; Van Keuren, E. (BASF Aktiengesellschaft, Polymers Laboratory, Ludwigshafen, D-67056, Germany). Journal of the Optical Society of America B: Optical Physics, 15(2), 889-894 (English) 1998. CODEN: JOBPDE. ISSN: 0740-3224. Publisher: Optical Society of America.

AB A new approach to polythiophene thin films with variable low-energy bandgap is reported. Stille reaction between a toolbox of different bis(trimethyltin)thiophenes and dihalothieno[3,4-b]pyrazines produces polythiophenes with interesting nonlinear optical properties. By variation of the substituent attached to the pyrazine ring, the electronic and optical properties of the polymer

can be strongly influenced, e.g., in lowering the bandgap (<1 eV) or in increasing the oscillator strength. The improved oscillator strength is accompanied by a longer conjugation length and leads to higher nonlinearities. Third-order susceptibilities,  $\chi^{(3)}$ , of  $10^{-8}$  esu were achieved with figures of merit,  $\chi^{(3)}/\alpha$ , of  $10^{-13}$  esu cm. Frequency-tunable degenerate 4-wave mixing expts. revealed a strong wavelength dispersion of the figure of merit above the bandgap, in contrast to scaling laws empirically found by other groups.

IT 204505-86-2P 204505-88-4P

(prepn. and optical nonlinear properties of)

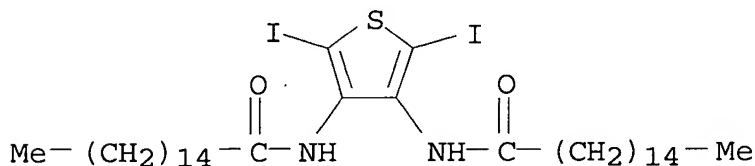
RN 204505-86-2 ZCA

CN Hexadecanamide, N,N'-(2,5-diiodo-3,4-thiophenediyl)bis-, polymer with 5,7-dibromo-2,3-didecylthieno[3,4-b]pyrazine and 2,5-thiophenediylbis(trimethylstannane) (9CI) (CA INDEX NAME)

CM 1

CRN 195831-19-7

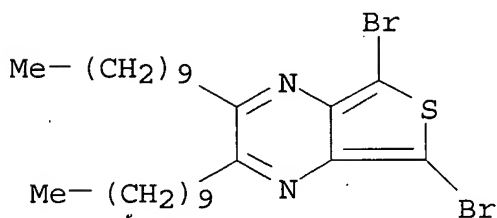
CMF C36 H64 I2 N2 O2 S



CM 2

CRN 195831-14-2

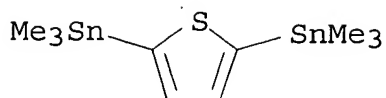
CMF C26 H42 Br2 N2 S



CM 3

CRN 86134-26-1

CMF C10 H20 S Sn2



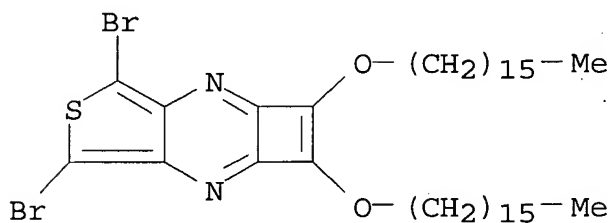
RN 204505-88-4 ZCA

CN Hexadecanamide, N,N'-(2,5-diiodo-3,4-thiophenediyl)bis-, polymer, with 1,3-dibromo-5,6-bis(hexadecyloxy)cyclobuta[b]thieno[3,4-e]pyrazine and 2,5-thiophenediylbis(trimethylstannane) (9CI) (CA INDEX NAME)

CM 1

CRN 195831-36-8

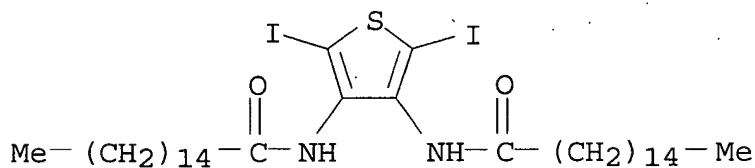
CMF C40 H66 Br2 N2 O2 S



CM 2

CRN 195831-19-7

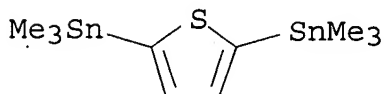
CMF C36 H64 I2 N2 O2 S



CM 3

CRN 86134-26-1

CMF C10 H20 S Sn2



IT 204505-86-2P 204505-88-4P

(prepn. and optical nonlinear properties of)



L10 ANSWER 30 OF 52 ZCA COPYRIGHT 2003 ACS

128:222780 Electrochemical properties of Langmuir-Blodgett films of polyesters derived from oligothiophenes. Goldenberg, Leonid M.; Donat-Bouillud, Anna; Leclerc, Mario; Petty, Michael C. (School of Engineering and Centre for Molecular Electronics, University of Durham, Durham, DH1 3LE, UK). Journal of Electroanalytical Chemistry, 443(2), 266-272 (English) 1998. CODEN: JECHE. ISSN: 0368-1874. Publisher: Elsevier Science S.A..

AB The electrochem. properties of polyesters derived from oligothiophenes have been studied in soln., and as Langmuir-Blodgett (LB) and cast films. Polyesters with four or five thiophene units exhibited a well-defined voltammetric response and good LB transfer characteristics. Mono and multilayer LB films were electroactive with clear sym. peaks, better developed than for the cast films. These films can be p- or n-doped electrochem.

IT 189190-15-6 189190-17-8 196800-70-1  
196800-72-3

(electrochem. properties of Langmuir-Blodgett films of polyesters derived from oligothiophenes)

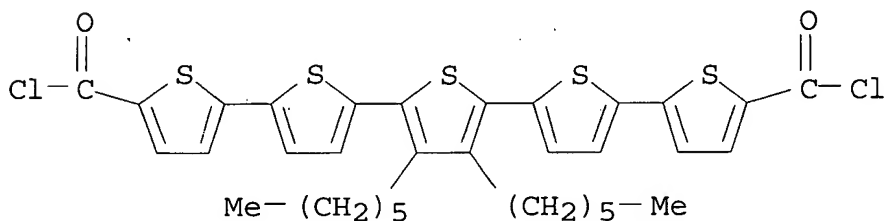
RN 189190-15-6 ZCA

CN [2,2':5',2'':5'',2''':5''',2''''-Quinquethiophene]-5,5''''-dicarbonyl dichloride, 3'',4''-dihexyl-, polymer with 1,10-decanediol (9CI) (CA INDEX NAME)

CM 1

CRN 189190-14-5

CMF C34 H34 Cl2 O2 S5



CM 2

CRN 112-47-0

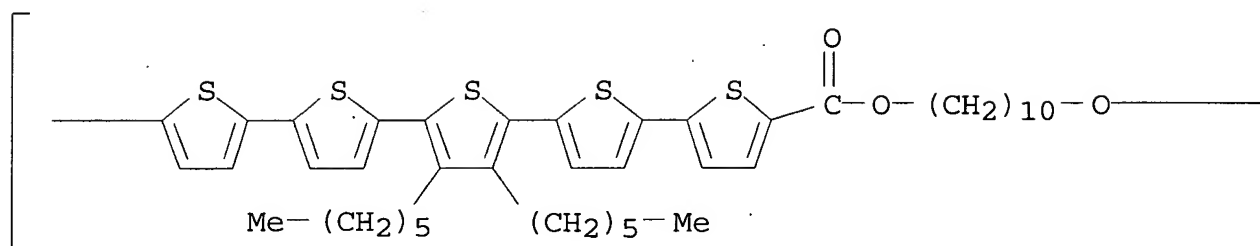
CMF C10 H22 O2

HO-(CH<sub>2</sub>)<sub>10</sub>-OH

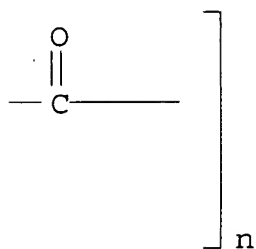
RN 189190-17-8. ZCA

CN Poly[(3'',4''-dihexyl[2,2':5',2'':5'',2''':5''',2''''-quinquethiophene]-5,5''''-diyl)carbonyloxy-1,10-decanediolyloxycarbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



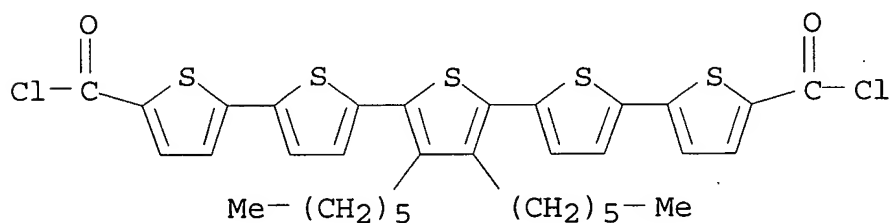
PAGE 1-B



RN 196800-70-1 ZCA  
 CN [2,2':5',2'':5'',2''':5''',2''''-Quinquethiophene]-5,5''''-dicarbonyl dichloride, 3'',4''-dihexyl-, polymer with 3,6,9,12,15-pentaoxaheptadecane-1,17-diol (9CI) (CA INDEX NAME)

CM 1

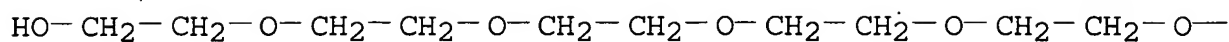
CRN 189190-14-5  
 CMF C34 H34 Cl2 O2 S5



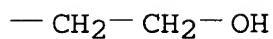
CM 2

CRN 2615-15-8  
 CMF C12 H26 O7

PAGE 1-A



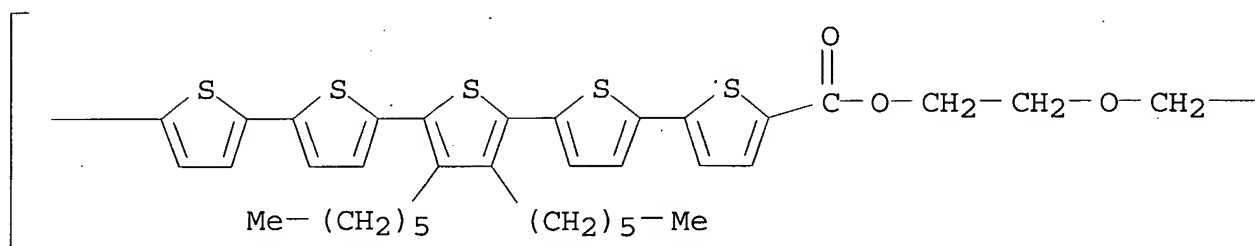
PAGE 1-B



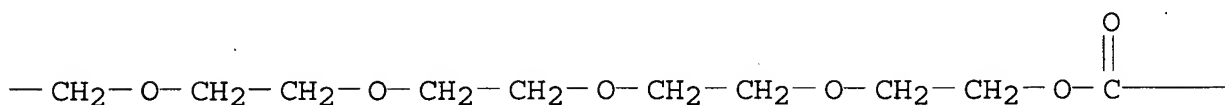
RN 196800-72-3 ZCA

CN Poly[(3'',4''-dihexyl[2,2':5',2'':5'',2''':5''',2''''-quinquethiophene]-5,5''''-diyl)carbonyloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxycarbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



PAGE 1-C



IT 189190-15-6 189190-17-8 196800-70-1  
196800-72-3

(electrochem. properties of Langmuir-Blodgett films of polyesters  
derived from oligothiophenes)

L10 ANSWER 31 OF 52 ZCA COPYRIGHT 2003 ACS

127:332110 Synthesis, Characterization, and Processing of New  
Electroactive and Photoactive Polyesters Derived from  
Oligothiophenes. Donat-Bouillud, Anne; Mazerolle, Louise; Gagnon,  
Paul; Goldenberg, Leonid; Petty, Michael C.; Leclerc, Mario  
(Departement de Chimie, Universite de Montreal, Montreal, QC, H3C  
3J7, Can.). Chemistry of Materials, 9(12), 2815-2821 (English)  
1997. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American  
Chemical Society.

AB Incorporation of oligothiophene (d.p. 2-5) moieties into polyester  
structures permitted the prepn. of tunable electroactive and/or  
photoactive processable materials with good mech. properties.  
Polyesters with bithiophene or terthiophene units show interesting  
emissive properties in the blue range whereas, in addn. to  
interesting photophys. properties, polymers with quaterthiophene  
moieties exhibit a reversible redox process which leads to the  
formation of radical cations. These results clearly indicate for  
the first time that both p-type and n-type charge transport hopping  
(possibly through oligothiophene B-stacks) can also lead to  
interesting elec. cond. levels. Polyesters contg. quaterthiophene  
or pentathiophene units show some electroactivity affording the  
formation of radical cations and dimerized radical cations, while  
pentathiophene units even permit the formation of neg. charge  
carriers. The presence of these charge carriers increases  
dramatically the cond. to values up to 0.4 S/cm in both oxidized and  
reduced states. This good elec. transport of both p-type and n-type  
charge carriers combined with luminescent properties and  
Langmuir-Blodgett processability could lead to well-organized and  
efficient light-emitting devices.

IT 189190-01-0P 189190-04-3P 189190-15-6P  
189190-17-8P 196800-66-5P 196800-67-6P  
196800-70-1P 196800-72-3P

(prepn., photochromism, elec. cond., and Langmuir-Blodgett  
processability of oligothiophene-contg. polyesters)

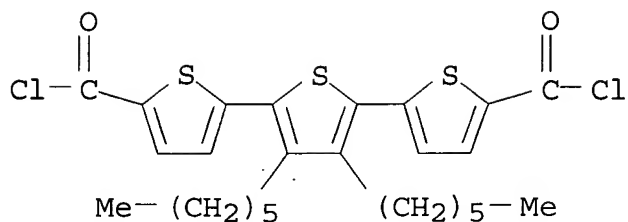
RN 189190-01-0 ZCA

CN [2,2':5',2''-Terthiophene]-5,5''-dicarbonyl dichloride,  
3',4'-dihexyl-, polymer with 1,10-decanediol (9CI) (CA INDEX NAME)

CM 1

CRN 170660-73-8

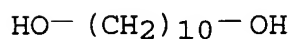
CMF C26 H30 Cl2 O2 S3



CM 2

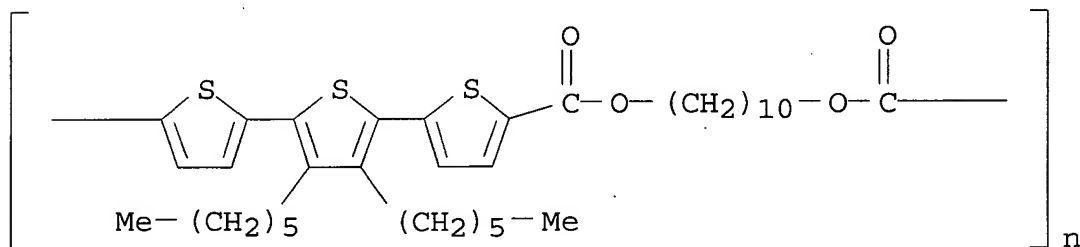
CRN 112-47-0

CMF C10 H22 O2



RN 189190-04-3 ZCA

CN Poly[(3',4'-dihexyl[2,2':5',2''-terthiophene]-5,5'''-diyl)carbonyloxy-1,10-decanediylloxycarbonyl] (9CI) (CA INDEX NAME)



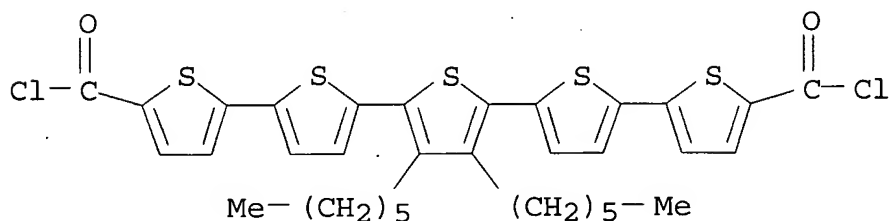
RN 189190-15-6 ZCA

CN [2,2':5',2'':5''',2''':5''',2''':5''''-Quinquethiophene]-5,5''''-dicarbonyl dichloride, 3'',4''-dihexyl-, polymer with 1,10-decanediol (9CI) (CA INDEX NAME)

CM 1

CRN 189190-14-5

CMF C34 H34 Cl2 O2 S5



CM 2

CRN 112-47-0

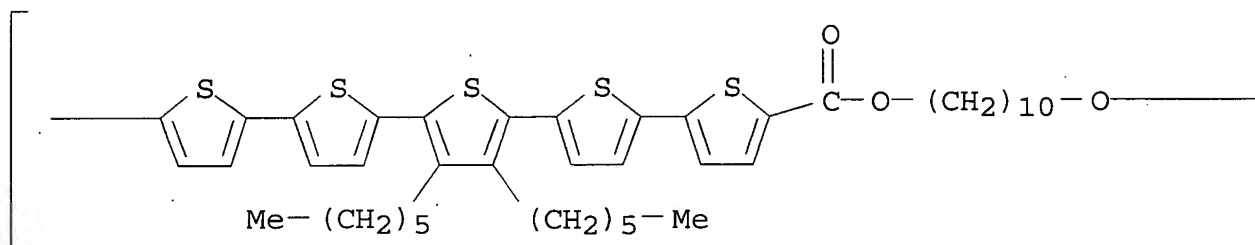
CMF C10 H22 O2

HO—(CH<sub>2</sub>)<sub>10</sub>—OH

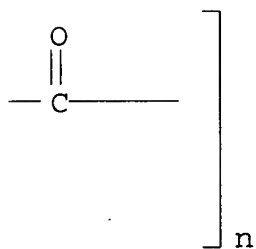
RN 189190-17-8 ZCA

CN Poly[(3'',4''-dihexyl[2,2':5,2'':5'',2''':5''',2''''-  
quinguethiophene]-5,5''''-diyl)carbonyloxy-1,10-  
decanediyloxycarbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



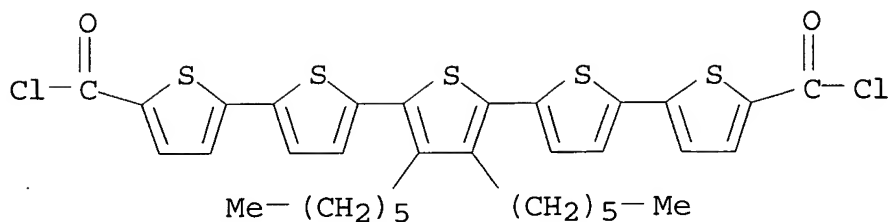
RN 196800-66-5 ZCA

CN [2,2':5,2'':5'',2''':5''',2''''-Quinguethiophene]-5,5''''-  
dicarbonyl dichloride, 3'',4''-dihexyl-, polymer with 1,6-hexanediol  
(9CI) (CA INDEX NAME)

CM 1

CRN 189190-14-5

CMF C34 H34 Cl2 O2 S5



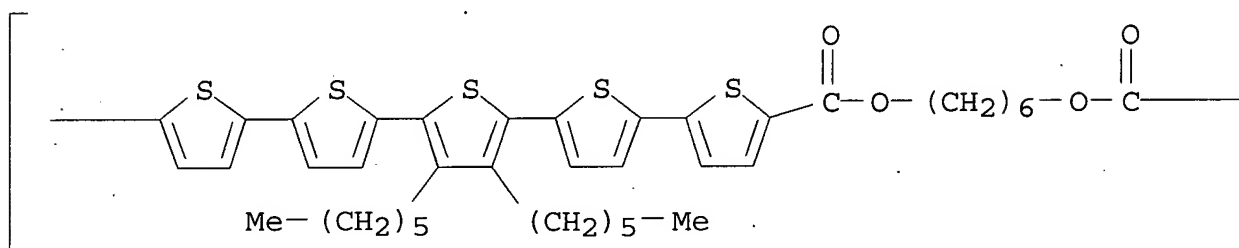
CM 2

CRN 629-11-8  
CMF C6 H14 O2

HO-(CH<sub>2</sub>)<sub>6</sub>-OH

RN 196800-67-6 ZCA  
CN Poly[(3'',4''-dihexyl[2,2':5',2'':5'',2''':5''',2''''-  
quinguethiophene]-5,5''''-diyl)carbonyloxy-1,6-  
hexanediylloxycarbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

]

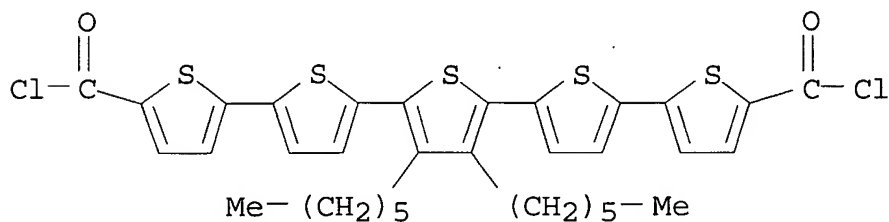
RN 196800-70-1 ZCA  
CN [2,2':5',2'':5'',2''':5''',2''''-Quinguethiophene]-5,5''''-

dicarbonyl dichloride, 3'',4''-dihexyl-, polymer with  
3,6,9,12,15-pentaoxaheptadecane-1,17-diol (9CI) (CA INDEX NAME)

CM 1

CRN 189190-14-5

CMF C34 H34 Cl2 O2 S5

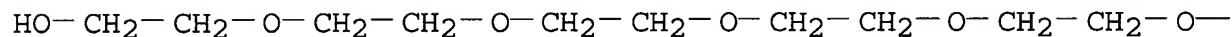


CM 2

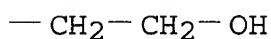
CRN 2615-15-8

CMF C12 H26 O7

PAGE 1-A



PAGE 1-B

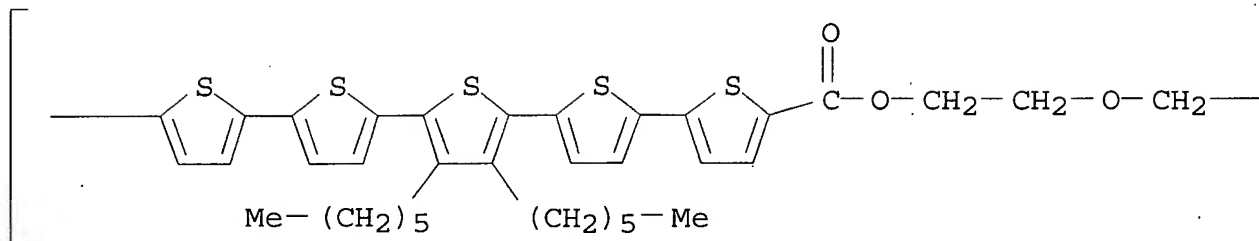


RN 196800-72-3 ZCA

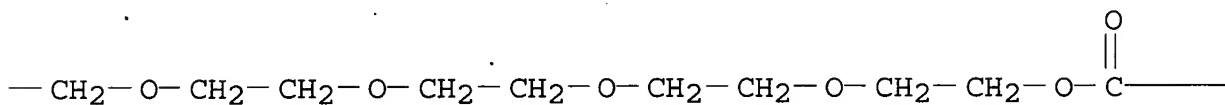
CN Poly[(3'',4''-dihexyl[2,2':5',2'':5'',2''':5''',2''''-  
quinguethiophene]-5,5''''-diyl)carbonyloxy-1,2-ethanediylloxy-1,2-  
ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-1,2-ethanediylloxy-  
1,2-ethanediylloxycarbonyl] (9CI) (CA INDEX NAME)



PAGE 1-A



PAGE 1-B



PAGE 1-C

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n

IT 189190-01-0P 189190-04-3P 189190-15-6P  
 189190-17-8P 196800-66-5P 196800-67-6P  
 196800-70-1P 196800-72-3P

(prepn., photochromism, elec. cond., and Langmuir-Blodgett processability of oligothiophene-contg. polyesters)

L10 ANSWER 32 OF 52 ZCA COPYRIGHT 2003 ACS

126:294064 Solvatochromism on regiochemically substituted poly(hexylthiophenes). Moreira, C. R. C. B.; Machado, D. S.; Souto-Maior, R. M.; Bohland Filho, J.; dos Santos, M. C. (Departamento de Quimica Fundamental, Universidade Federal de Pernambuco, Cidade Universitaria, 50670-901, Recife, PE, Brazil). Synthetic Metals, 84(1-3), 811-812 (English) 1997. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier.

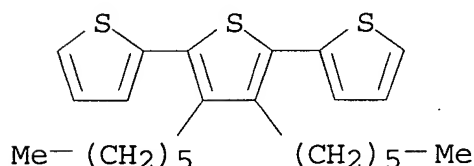
AB Poly(3,3''-dihexylterthiophene) and poly(3',4'-dihexylterthiophene) were synthesized and studied with respect to their solvatochromic properties. While both polymers in chloroform soln. have max.

absorption at approx. the same wavelength they behave differently with respect to changes obsd. on their UV-visible spectra when the quality of the solvent is changed. A microscopic model for the solvation of both polymers has been developed based on semi-empirical quantum chem. calcns. The results are consistent with a high degree of conformational disorder in the 3',4'-substituted polymer even in the solid state, leading to chains of short conjugation length, and thus less sensitive to solvation effects. In 3,3''-substituted polythiophene, on the other hand, the substituents impose smaller torsional barriers, similar to the ones found in regioregular poly (3-hexylthiophene). A rod-to-coil like transition is thus expected to occur as a function of solvent quality.

IT 151486-98-5, Poly(3',4'-dihexylterthiophene)  
(solvatochromism on poly(dihexylterthiophene))  
RN 151486-98-5 ZCA  
CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 151324-66-2  
CMF C24 H32 S3



IT 151486-98-5, Poly(3',4'-dihexylterthiophene)  
(solvatochromism on poly(dihexylterthiophene))

L10 ANSWER 33 OF 52 ZCA COPYRIGHT 2003 ACS

126:293979 Synthesis and characterization of polyesters derived from oligothiophenes. Donat-Bouillud, A.; Mazerolle, L.; Leclerc, M. (Universite de Montreal, Departement de Chimie, Succ. centre ville, Montreal, Q.C. H3T 3J7, Can.). Synthetic Metals, 84(1-3), 235-236 (English) 1997. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier.

AB In the development of useful polymeric materials for electro-optical applications, we have prepd. polyesters derived from oligothiophene units (from bithiophene to pentathiophene). By employing oligothiophenes, the conjugation length can be controlled and the emission characteristics of the chromophore can be fine-tuned. The non-emitting flexible spacers improve soly. and flexibility.

IT 189190-01-0P 189190-04-3P 189190-15-6P  
189190-17-8P  
(prepn., characterization and properties of)

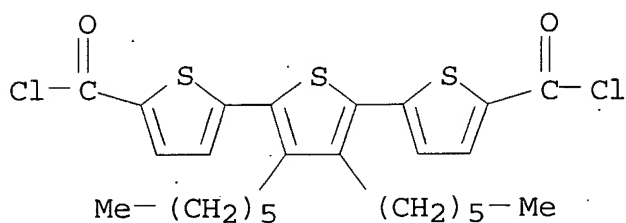
RN 189190-01-0 ZCA  
CN [2,2':5',2''-Terthiophene]-5,5''-dicarbonyl dichloride,

3',4'-dihexyl-, polymer with 1,10-decanediol (9CI) (CA INDEX NAME)

CM 1

CRN 170660-73-8

CMF C26 H30 Cl2 O2 S3



CM 2

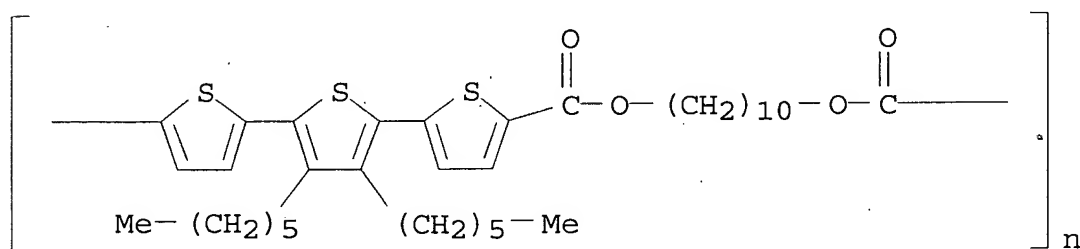
CRN 112-47-0

CMF C10 H22 O2

HO-(CH<sub>2</sub>)<sub>10</sub>-OH

RN 189190-04-3 ZCA

CN Poly[(3',4'-dihexyl[2,2':5',2'':5''-terthiophene]-5,5'-diyl)carbonyloxy-1,10-decanediylloxycarbonyl] (9CI) (CA INDEX NAME)



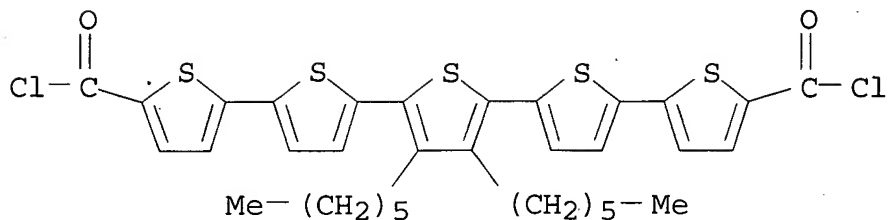
RN 189190-15-6 ZCA

CN [2,2':5',2'':5'',2''':5''',2''':5'''-Quinquethiophene]-5,5''''-dicarbonyl dichloride, 3',4'-dihexyl-, polymer with 1,10-decanediol (9CI) (CA INDEX NAME)

CM 1

CRN 189190-14-5

CMF C34 H34 Cl2 O2 S5



CM 2

CRN 112-47-0

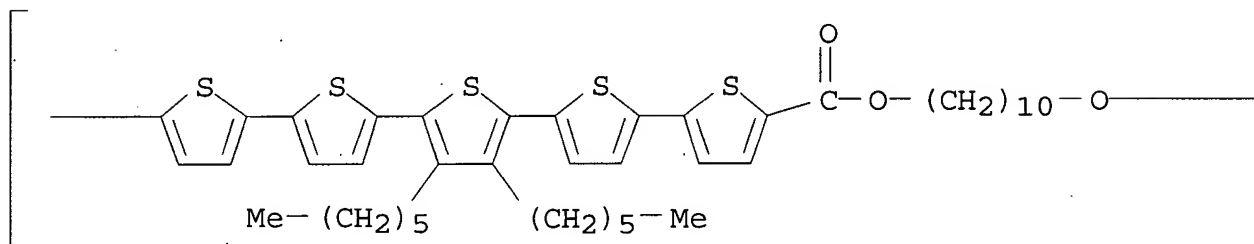
CMF C10 H22 O2

$\text{HO}-(\text{CH}_2)_{10}-\text{OH}$

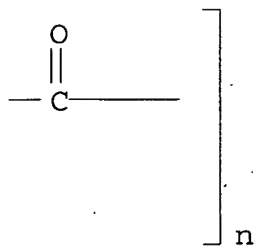
RN 189190-17-8 ZCA

CN Poly[(3'',4''-dihexyl[2,2':5,2'':5'',2''':5''',2''''-quinquethiophene]-5,5''''-diyl)carbonyloxy-1,10-decanediylloxycarbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 189190-01-0P 189190-04-3P 189190-15-6P  
189190-17-8P

(prepn., characterization and properties of)

L10 ANSWER 34 OF 52 ZCA COPYRIGHT 2003 ACS

125:34267 Poly(3',4'-dibutyl-.alpha.-terthiophene-phenylene-vinylene), and poly(3',4'-dibutyl-.alpha.-terthiophene-phenylene-imine): synthesis and properties of two new isoelectronic soluble conjugated polymers. Wang, Chenggang; Xie, Xusheng; LeGoff, Eugene; Kanatzidis, Mercouri G. (Department Chemistry and Center Fundamental Materials Research, Michigan State University, East Lansing, MI, 48824, USA). Materials Research Society Symposium Proceedings, 413(Electrical, Optical, and Magnetic Properties of Organic Solid State Materials III), 483-490 (English) 1996. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.

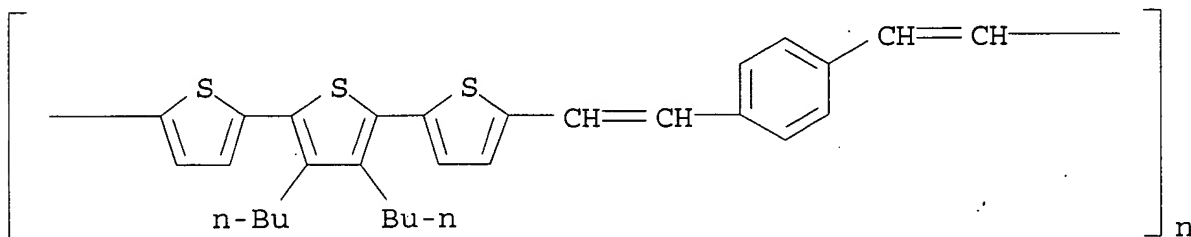
AB A new sol. and dopable copolymer consisting of 3',4'-dibutyl-2,2':5',2''-terthiophene and phenylene vinylene units has been designed and prepd. via a Wittig reaction. This copolymer is sol. in common org. solvents such as THF and CHCl<sub>3</sub>, and can be doped with various oxidants increasing its elec. cond. by several orders of magnitude. Its films are electrochromic and turn reversibly and rapidly from red to green-blue upon doping and undoping electrochem. If the phenylene vinylene units are replaced with phenylene imine units, another interesting new polymer forms which is not readily dopable with the same oxidants but is dopable with acids. The new material exhibits strong chemochromism with dramatic shifts in its optical absorption spectra. In the undoped state both copolymers show strong photoluminescence.

IT 169565-03-1P 174659-48-4P 174659-49-5P

(prepn. and properties of isoelectronic conjugated polymers contg. terthiophene units)

RN 169565-03-1 ZCA

CN Poly[(3',4'-dibutyl[2,2':5',2''-terthiophene]-5,5''-diyl)-1,2-ethenediyl-1,4-phenylene-1,2-ethenediyl] (9CI) (CA INDEX NAME)



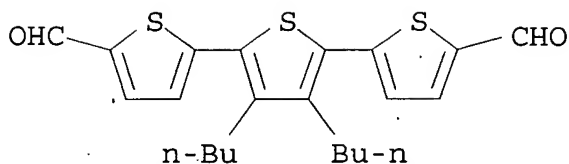
RN 174659-48-4 ZCA

CN [2,2':5',2''-Terthiophene]-5,5''-dicarboxaldehyde, 3',4'-dibutyl-, polymer with 1,4-benzenediamine (9CI) (CA INDEX NAME)

CM 1

CRN 169565-01-9

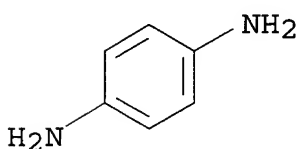
CMF C22 H24 O2 S3



CM 2

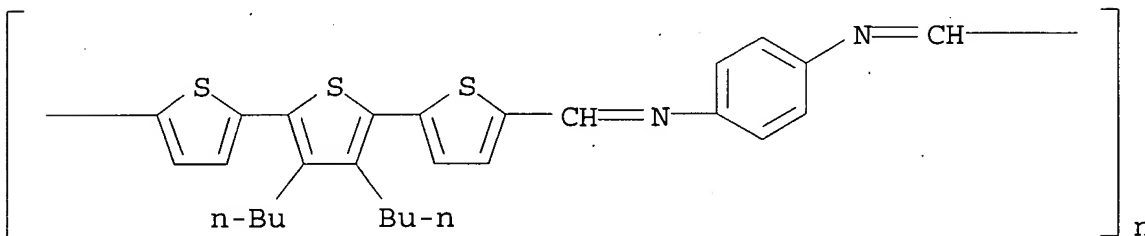
CRN 106-50-3

CMF C6 H8 N2



RN 174659-49-5 ZCA

CN Poly[(3',4'-dibutyl[2,2':5',2''-terthiophene]-5,5''-diyl)methylidynenitrilo-1,4-phenylenenitrilomethylidyne] (9CI) (CA INDEX NAME)



IT 169565-03-1P 174659-48-4P 174659-49-5P

(prepn. and properties of isoelectronic conjugated polymers  
contg. terthiophene units)

L10 ANSWER 35 OF 52 ZCA COPYRIGHT 2003 ACS

124:233307 Synthesis and Characterization of A New Conjugated Aromatic Poly(azomethine) Derivative Based on the 3',4'-Dibutyl-.alpha.-Terthiophene Building Block. Wang, Chenggang; Shieh, Seaver; LeGoff, Eugene; Kanatzidis, Mercouri G. (Department of Chemistry, Michigan State University, East Lansing, MI, 48824, USA). Macromolecules, 29(9), 3147-56 (English) 1996. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB A new conjugated arom. poly(azomethine) deriv., poly(3',4'-dibutyl-.alpha.-terthiophene-azomethine-1,4-phenylene-azomethine) (PBTPi), has been prepd. by polycondensation of 2,5''-diformyl-3',4'-dibutyl-2,2':5',2''-terthiophene with 1,4-phenylenediamine under the ethanothothermal conditions. The red polycryst. PBTPi was

characterized by X-ray diffraction, NMR, FTIR, UV-visible-near-IR, photoluminescence, and ESR spectroscopies. PBTPI is partially sol. in THF, giving an orange soln. with an absorption max. ( $\lambda_{\text{max}}$ ) of 457 nm. In the solid state, PBTPI has an optical band gap of 2.06 eV, which is one of the lowest among poly(azomethines), and is highly sensitive to a strong acid environment. Protonation yields a blue polymer with an optical band gap of 1.61 eV. The polymer is completely sol. in concd. sulfuric acid and nitromethane contg. Lewis acids (e.g.,  $\text{AlCl}_3$ ), giving blue solns. with  $\lambda_{\text{max}}$  of 656 and 638 nm, resp. Iodine-doped PBTPI shows low elec. cond. at the order of  $10^{-7}$ - $10^{-8}$  S/cm. The properties of PBTPI are compared to other, previously characterized, related polymers.

IT 174659-48-4D, 2,5''-Diformyl-3',4'-dibutyl-2,2':5',2''-terthiophene-1,4-phenylenediamine copolymer, HCl-doped or  $\text{AlCl}_3$  complexes

(optical and elec. properties of conjugated arom. poly(azomethine) deriv. based on the 3',4'-dibutyl-.alpha.-terthiophene building block)

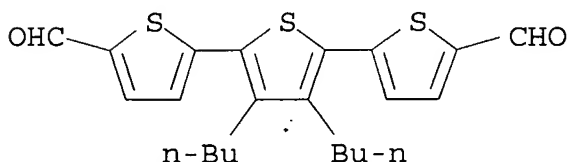
RN 174659-48-4 ZCA

CN [2,2':5',2''-Terthiophene]-5,5''-dicarboxaldehyde, 3',4'-dibutyl-, polymer with 1,4-benzenediamine (9CI) (CA INDEX NAME)

CM 1

CRN 169565-01-9

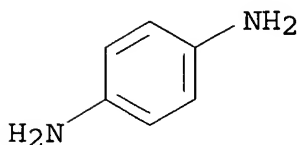
CMF C22 H24 O2 S3



CM 2

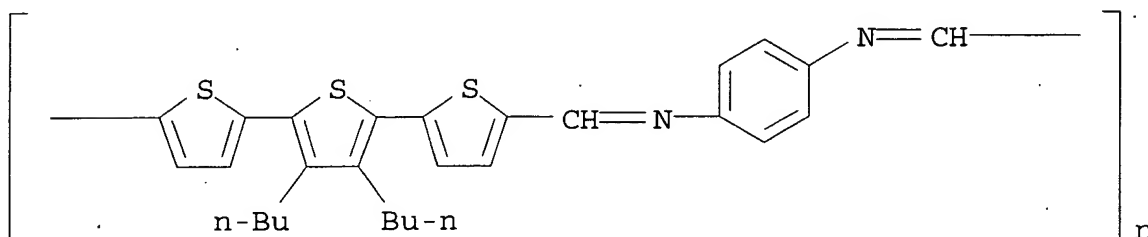
CRN 106-50-3

CMF C6 H8 N2



IT 174659-49-5D, Poly(3',4'-dibutyl-.alpha.-terthiophene-azomethine-1,4-phenylene-azomethine); HCl-doped or  $\text{AlCl}_3$  complexes (prepn. and optical and elec. properties of conjugated arom. poly(azomethine) deriv. based on the 3',4'-dibutyl-.alpha.-terthiophene building block)

RN 174659-49-5 ZCA  
 CN Poly[(3',4'-dibutyl[2,2':5',2''-terthiophene]-5,5''-diyl)methylidynitrilo-1,4-phenylenenitrilomethylidyne] (9CI) (CA INDEX NAME)

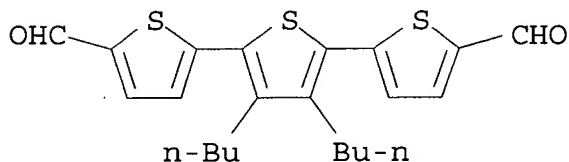


IT 174659-48-4P, 2,5''-Diformyl-3',4'-dibutyl-2,2':5',2''-terthiophene-1,4-phenylenediamine copolymer 174659-49-5P, Poly(3',4'-dibutyl-.alpha.-terthiophene-azomethine-1,4-phenylene-azomethine)  
 (prepn. and optical and elec. properties of conjugated arom. poly(azomethine) deriv. based on the 3',4'-dibutyl-.alpha.-terthiophene building block)

RN 174659-48-4 ZCA  
 CN [2,2':5',2''-Terthiophene]-5,5''-dicarboxaldehyde, 3',4'-dibutyl-, polymer with 1,4-benzenediamine (9CI) (CA INDEX NAME)

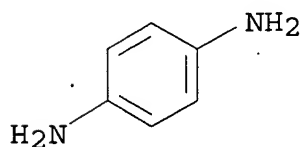
CM 1

CRN 169565-01-9  
 CMF C22 H24 O2 S3



CM 2

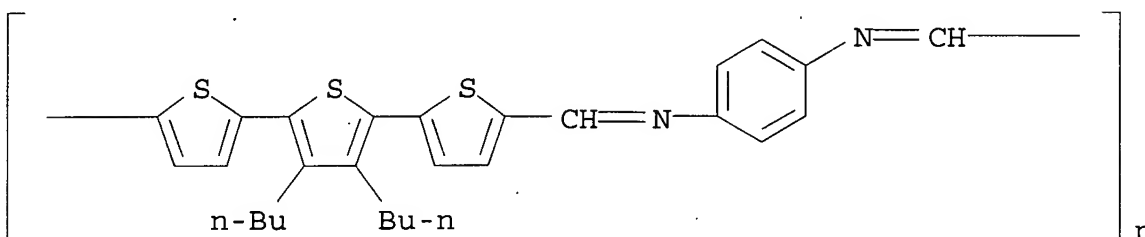
CRN 106-50-3  
 CMF C6 H8 N2



RN 174659-49-5 ZCA



CN Poly[(3',4'-dibutyl[2,2':5',2''-terthiophene]-5,5''-diyl)methylidynenitrilo-1,4-phenylenenitrilomethylidyne] (9CI) (CA INDEX NAME)



IT 174659-48-4D, 2,5''-Diформyl-3',4'-dibutyl-2,2':5',2''-terthiophene-1,4-phenylenediamine copolymer, HCl-doped or AlCl<sub>3</sub> complexes

(optical and elec. properties of conjugated arom. poly(azomethine) deriv. based on the 3',4'-dibutyl-.alpha.-terthiophene building block)

IT 174659-49-5D, Poly(3',4'-dibutyl-.alpha.-terthiophene-azomethine-1,4-phenylene-azomethine), HCl-doped or AlCl<sub>3</sub> complexes

(prepn. and optical and elec. properties of conjugated arom. poly(azomethine) deriv. based on the 3',4'-dibutyl-.alpha.-terthiophene building block)

IT 174659-48-4P, 2,5''-Diформyl-3',4'-dibutyl-2,2':5',2''-terthiophene-1,4-phenylenediamine copolymer 174659-49-5P, Poly(3',4'-dibutyl-.alpha.-terthiophene-azomethine-1,4-phenylene-azomethine)

(prepn. and optical and elec. properties of conjugated arom. poly(azomethine) deriv. based on the 3',4'-dibutyl-.alpha.-terthiophene building block)

L10 ANSWER 36 OF 52 ZCA COPYRIGHT 2003 ACS

124:203232 Novel poly(3,3''- and 3',4'-dialkyl-2,2':5',2''-terthiophene)s by chemical oxidative synthesis: evidence for a new step towards the optimization of this process. Andreani, Franco; Salatelli, Elisabetta; Lanzi, Massimiliano (Dip. Chim. Ind. Materiali, Univ. Bologna, Bologna, 40136, Italy). Polymer, 37(4), 661-5 (English) 1996. CODEN: POLMAG. ISSN: 0032-3861. Publisher: Elsevier.

AB The synthesis of poly(3,3''- and 3',4'-dialkyl-2,2':5',2''-terthiophene)s possessing a full ordered regiochem. of bonding and substitution, as well as a conjugated chain with the min. possible amt. of steric interactions between the substituents, is described. The synthesis was achieved through the simplest chem. method, namely the oxidative polymn. reaction based on FeCl<sub>3</sub> as oxidant. The structural regularities of the polymers were confirmed by FTIR and <sup>1</sup>H NMR spectroscopy. Exptl. conditions of special interest for improving yields and mol. wts. of the neutral sol. polymers are discussed.

IT 151486-98-5P, Poly(3',4'-dihexyl-.alpha.-terthiophene)

**174509-57-0P**, Poly(3',4'-didodecyl-.alpha.-terthiophene)  
(optimization of prepn. of poly(3,3''- and 3',4'-dialkyl-  
2,2''5',2''-terthiophene)s)

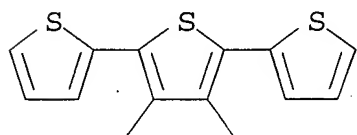
RN 151486-98-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, homopolymer (9CI) (CA  
INDEX NAME)

CM 1

CRN 151324-66-2

CMF C24 H32 S3



Me-(CH<sub>2</sub>)<sub>5</sub> (CH<sub>2</sub>)<sub>5</sub>-Me

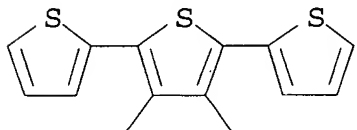
RN 174509-57-0 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-didodecyl-, homopolymer (9CI) (CA  
INDEX NAME)

CM 1

CRN 174509-55-8

CMF C36 H56 S3



Me-(CH<sub>2</sub>)<sub>11</sub> (CH<sub>2</sub>)<sub>11</sub>-Me

IT **151486-98-5P**, Poly(3',4'-dihexyl-.alpha.-terthiophene)

**174509-57-0P**, Poly(3',4'-didodecyl-.alpha.-terthiophene)  
(optimization of prepn. of poly(3,3''- and 3',4'-dialkyl-  
2,2''5',2''-terthiophene)s)

L10 ANSWER 37 OF 52 ZCA COPYRIGHT 2003 ACS

124:177137 Electrochemical synthesis and electronic properties of  
poly(3,4-dibutyl-.alpha.-terthiophene). Glenis, S.; Benz, M.;  
LeGoff, E.; Kanatzidis, M. G.; DeGroot, D. C.; Schindler, J. L.;  
Kannewurf, C. R. (Department of Chemistry and Center for Fundamental  
Materials Research, Michigan State University, East Lansing, MI,  
48824, USA). Synthetic Metals, 75(3), 213-21 (English) 1995.  
CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier.

AB Electrochem. prepd. poly(3',4'-dibutyl-.alpha.-terthiophene) was  
investigated and the relationship between the electronic properties,  
the chem. structure of the monomer and the electrolyte used during  
the electropolymerization was studied. Doping studies were carried out

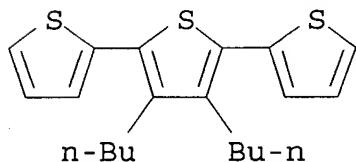
with various electrolytes. Electrochem. oxidized (p-doping) and reduced (n-doping) thin films of this polymer were prepd. on a Pt electrode under the same electrochem. conditions. The films show a reversible oxidn. wave yielding an elec. conducting polymer and a reversible redn. wave which is sensitive to the nature of the electrolyte. A value for the band gap derived electrochem. compares well with that obtained by optical absorption measurements and XPS. The elec. cond. varies by  $10^{12}$  S cm<sup>-1</sup> between the doped and undoped states of the polymer. The temp.-independent magnetic susceptibility above 100 K is consistent with the conducting properties of this polymer. The electrochem. prepd. material is compared with the chem. prepd. one using the same monomer.

IT 156016-04-5P, Poly(3',4'-dibutyl-.alpha.-terthiophene)  
(electrochem. prepn. and elec. properties of)  
RN 156016-04-5 ZCA  
CN 2,2':5',2''-Terthiophene, 3',4'-dibutyl-, homopolymer (9CI) (CA  
INDEX NAME)

CM 1

CRN 152389-25-8

CMF C20 H24 S3



IT 156016-04-5P, Poly(3',4'-dibutyl-.alpha.-terthiophene)  
(electrochem. prepn. and elec. properties of)

L10 ANSWER 38 OF 52 ZCA COPYRIGHT 2003 ACS

124:56904 Reductive polymerization of halothiophene. Kitada, Katsutsugu; Ozaki, Shoichiro (Dep. Applied Chem., Fac. Eng., Ehime Univ., Matsuyama, 790, Japan). Polymer Journal (Tokyo), 27(12), 1161-6 (English) 1995. CODEN: POLJB8. ISSN: 0032-3896. Publisher: Society of Polymer Science, Japan.

AB The reductive prepn. of polythiophene and copolymers from 2,5-dibromothiophene and tetrabromothiophene is described. In this reaction, hydrazine and Pd catalysts were used. The yield of polymer was 65% when 2,5-dibromothiophene was used as a monomer. The elec. cond. was  $1 \times 10^{-5}$  S cm<sup>-1</sup> (I2 20 wt%) and  $1 \times 10^{-3}$  S cm<sup>-1</sup> (I2 50 wt%). The polymer contained 1.6 wt.% residual Br. As the mixing ratio of 2,5-dibromothiophene to tetrabromothiophene decreased, the yield of the polymer decreased. A polymer from tetrabromothiophene gave 41% yield. The elec. cond. decreased with increasing tetrabromothiophene content.

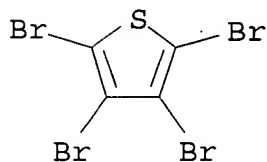
IT 172333-84-5P, 2,5-Dibromothiophene-tetrabromothiophene  
copolymer  
(prepn. and conducting properties of iodine-doped)

RN 172333-84-5 ZCA  
CN Thiophene, tetrabromo-, polymer with 2,5-dibromothiophene (9CI) (CA INDEX NAME)

CM 1

CRN 3958-03-0

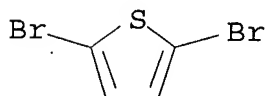
CMF C4 Br4 S



CM 2

CRN 3141-27-3

CMF C4 H2 Br2 S



IT 172333-84-5P, 2,5-Dibromothiophene-tetrabromothiophene copolymer  
(prepn. and conducting properties of iodine-doped)

L10 ANSWER 39 OF 52 ZCA COPYRIGHT 2003 ACS

123:315123 Spectroscopy and Photophysics of Some Oligomers and Polymers Derived from Thiophenes. Belletete, Michel; Mazerolle, Louise; Desrosiers, Natalie; Leclerc, Mario; Durocher, Gilles (Departement de Chimie, Universite de Montreal, Montreal, QC, H3C3J7, Can.). Macromolecules, 28(25), 8587-97 (English) 1995. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB A series of bithiophene and terthiophene derivs. and their resp. polymers have been prepd. The absorption and fluorescence spectra, quantum yields, and lifetimes of these derivs. in soln. are studied and compared. The bandwidths of the absorption and fluorescence profiles of the different derivs. are used to discuss the geometry changes occurring from one mol. to the other in the ground and excited states. Increasing the chain length and/or substitution of bithiophene and terthiophene at both ends of the mol. with a carbonyl chloride group increases the planarity of the mols. in both their ground and excited states by improving the electronic delocalization throughout the mol. frame. Comparison between the absorption and fluorescence spectra has proved to be a good tool to discover conformational changes occurring during the relaxation of the excited state. All the mols. investigated show geometrical

changes from a twisted ground state to a more planar conformation in the excited state. A radiationless torsional mechanism and intersystem crossing processes are involved in the excited state relaxation of the various mols. Incorporation of substituted bithiophene and terthiophene units in arom. polyesters have been made and the optical and photophys. properties of these polymers are studied. It is shown that the bithiophene and terthiophene units are perfectly isolated in the polymeric chain. The photophys. properties of the polyesters make these materials good candidates for the fabrication of efficient blue-light-emitting diodes.

IT 151486-98-5 170660-79-4

(spectroscopy and photophysics of some oligomers and polymers derived from thiophenes)

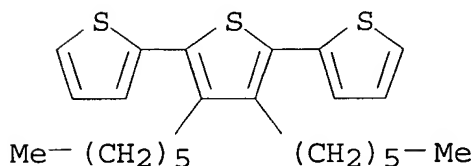
RN 151486-98-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

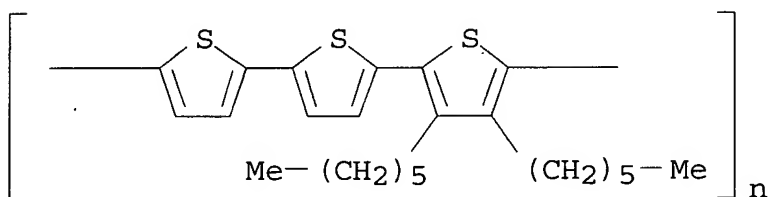
CRN 151324-66-2

CMF C24 H32 S3



RN 170660-79-4 ZCA

CN Poly(3,4-dihexyl[2,2':5',2''-terthiophene]-5,5''-diyl) (9CI) (CA INDEX NAME)



IT 170660-76-1P 170660-77-2P

(spectroscopy and photophysics of some oligomers and polymers derived from thiophenes)

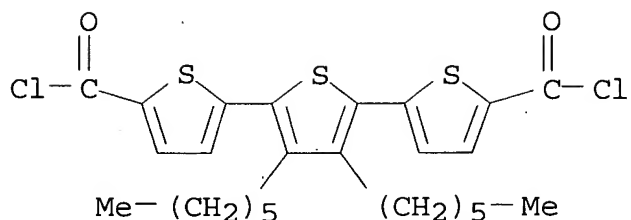
RN 170660-76-1 ZCA

CN [2,2':5',2''-Terthiophene]-5,5''-dicarbonyl dichloride, 3',4'-dihexyl-, polymer with 1,4-benzenediol (9CI) (CA INDEX NAME)

CM 1

CRN 170660-73-8

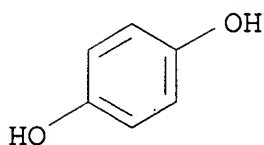
CMF C26 H30 Cl2 O2 S3



CM 2

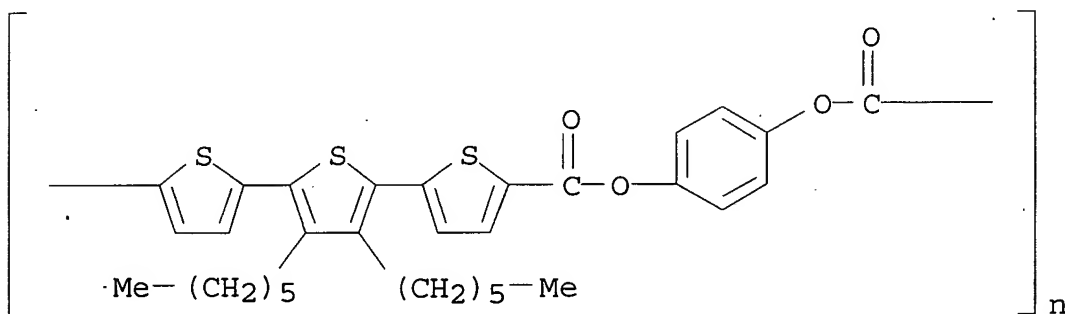
CRN 123-31-9

CMF C6 H6 O2



RN 170660-77-2 ZCA

CN Poly[(3',4'-dihexyl[2,2':5',2''-terthiophene]-5,5''-diyl)carbonyloxy-1,4-phenyleneoxycarbonyl] (9CI) (CA INDEX NAME)



IT 151486-98-5 170660-79-4

(spectroscopy and photophysics of some oligomers and polymers derived from thiophenes)

IT 170660-76-1P 170660-77-2P

(spectroscopy and photophysics of some oligomers and polymers derived from thiophenes)

L10 ANSWER 40 OF 52 ZCA COPYRIGHT 2003 ACS

123:286996 Poly(3',4'-dibutyl-.alpha.-terthiophene-phenylene-vinylene): a new soluble and dopable phenylene vinylene-based conjugated polymer. Wang, Chenggang; Xie, Xusheng; LeGoff, Eugene; Albritton-Thomas, Joyce; Kanneur, Carl R.; Kanatzidis, Mercouri G. (Department of Chemistry and Center for Fundamental Materials

Research, Michigan State University, East Lansing, MI, 48824, USA).  
 Synthetic Metals, 74(1), 71-4 (English) 1995. CODEN: SYMEDZ. ISSN:  
 0379-6779. Publisher: Elsevier.

AB A new sol. and dopable copolymer consisting of 3',4'-dibutyl-  
 2,2':5',2''-terthiophene and phenylenevinylene units has been  
 designed and prep'd. via a Wittig reaction. This title copolymer is  
 sol. in common org. solvents such as THF and CHCl<sub>3</sub>, and can be doped  
 with iodine, achieving an elec. cond. of about 3.2.times.10<sup>-2</sup> S/cm  
 at room temp. Films of this copolymer are electroactive and turn  
 reversibly and rapidly from red to green-blue upon doping and  
 undoping electrochem.

IT 169565-02-0P 169565-03-1P

(prepn. and elec. properties of poly(3',4'-dibutyl-.alpha.-  
 terthiophene-phenylene-vinylene))

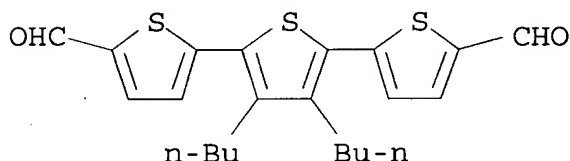
RN 169565-02-0 ZCA

CN [2,2':5',2''-Terthiophene]-5,5''-dicarboxaldehyde, 3',4'-dibutyl-,  
 polymer with (1,4-phenylenedimethyldiyl)bis[triphenylphosphorane]  
 (9CI) (CA INDEX NAME)

CM 1

CRN 169565-01-9

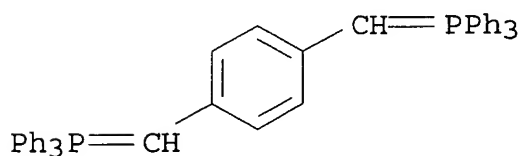
CMF C22 H24 O2 S3



CM 2

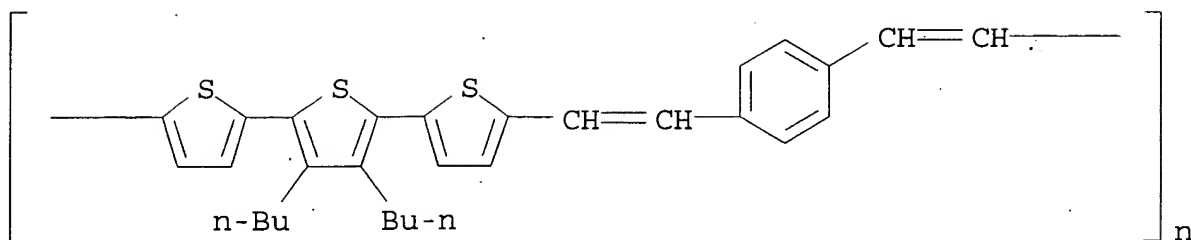
CRN 16828-78-7

CMF C44 H36 P2



RN 169565-03-1 ZCA

CN Poly[(3',4'-dibutyl[2,2':5',2''-terthiophene]-5,5''-diyl)-1,2-  
 ethenediyl-1,4-phenylene-1,2-ethenediyl] (9CI) (CA INDEX NAME)



IT 169565-02-0P 169565-03-1P

(prepn. and elec. properties of poly(3',4'-dibutyl-.alpha.-terthiophene-phenylene-vinylene))

L10 ANSWER 41 OF 52 ZCA COPYRIGHT 2003 ACS

123:286791 The synthesis of decyloxy substituted poly(1,2-ethynediyl-2,5-thiophenediyls). McKellar, B. R.; Feld, William A. (Department Chemistry, Wright State University, Dayton, OH, 45435, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 35(2), 680-1 (English) 1994. CODEN: ACPAY. ISSN: 0032-3934. Publisher: American Chemical Society, Division of Polymer Chemistry.

AB An improved prepn. of 2,5-diethynyl-3,4-didecyloxythiophene (I) is reported. I was polymd. with 2,5-dibromo-3,4-didecyloxythiophene or 2,5-dibromothiophene to give polymers with thermal stability .ltoreq.200.degree..

IT 169826-79-3P

(prepn. and polymn. of decyloxy-substituted thiophenes)

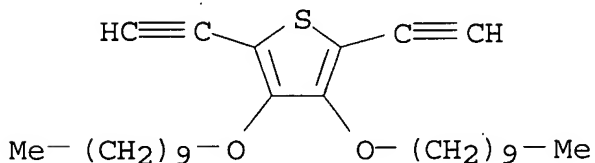
RN 169826-79-3 ZCA

CN Thiophene, 3,4-bis(decyloxy)-2,5-diethynyl-, polymer with 2,5-dibromothiophene (9CI) (CA INDEX NAME)

CM 1

CRN 152189-52-1

CMF C28 H44 O2 S

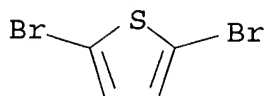


CM 2

CRN 3141-27-3

CMF C4 H2 Br2 S





IT 169826-79-3P

(prepn. and polymn. of decyloxy-substituted thiophenes)

L10 ANSWER 42 OF 52 ZCA COPYRIGHT 2003 ACS

123:34121 Chromic Phenomena in Regioregular and Nonregioregular Polythiophene Derivatives. Faied, Karim; Frechette, Martin; Ranger, Maxime; Mazerolle, Louise; Levesque, Isabelle; Leclerc, Mario; Chen, Tian-An; Rieke, Reuben D. (Departement de Chimie, Universite de Montreal, Montreal, QC, H3C 3J7, Can.). Chemistry of Materials, 7(7), 1390-6 (English) 1995. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

AB Chromic phenomena in various regioregular and nonregioregular polythiophene derivs. were investigated both in the solid state and in soln. Structural, thermal, and optical measurements revealed a first-order-like conformational transition of the conjugated backbone (formation of twistons) which leads to important color changes. This thermally induced cooperative conformational transition of the main chain was obsd. in both amorphous (even with branched side chains) and semicryst. regioregular polythiophene derivs. but did not occur in nonregioregular polymers. This single-chain phenomenon is strongly dependent upon the substitution pattern but is not necessarily driven by side-chain or main-chain crystn. Noncovalent interactions between ether-substituted regioregular polythiophenes and ionic species can be used to stabilize the coplanar form of the backbone, leading to interesting ionochromic effects.

IT 151486-98-5P, Poly(3',4'-dihexylterthiophene)

(chromic phenomena in regioregular and nonregioregular polythiophene derivs.)

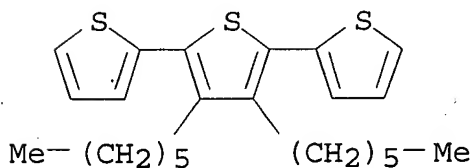
RN 151486-98-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 151324-66-2

CMF C24 H32 S3



IT 151486-98-5P, Poly(3',4'-dihexylterthiophene)

(chromic phenomena in regioregular and nonregioregular polythiophene derivs.)

L10 ANSWER 43 OF 52 ZCA COPYRIGHT 2003 ACS

121:36577 Studies on conjugated polymers: synthesis and properties of a novel polythiophene derivative - poly(3',4'-dibutyl-.alpha.-terthiophene). Wang, Chenggang; Benz, Michael E.; LeGoff, Eugene; Schindler, John L.; Kannewurf, Carl R.; Kanatzidis, Mercouri G. (Dep. Chem., Michigan State Univ., East Lansing, MI, 48824, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 34(2), 422-3 (English) 1993. CODEN: ACPPAY. ISSN: 0032-3934.

AB The title polymer is characterized via FTIR, optical spectra, and gel-permeation chromatog.; its elec. cond. is examd.

IT 156016-04-5

(elec. cond. and optical properties and mol. wt. of)

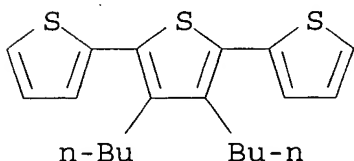
RN 156016-04-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dibutyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 152389-25-8

CMF C20 H24 S3



IT 156016-04-5

(elec. cond. and optical properties and mol. wt. of)

L10 ANSWER 44 OF 52 ZCA COPYRIGHT 2003 ACS

120:246188 Studies on Conjugated Polymers: Preparation, Spectroscopic, and Charge-Transport Properties of a New Soluble Polythiophene Derivative: Poly(3',4'-dibutyl-2,2':5',2''-terthiophene). Wang, Chenggang; Benz, Michael E.; LeGoff, Eugene; Schindler, Jon L.; Allbritton-Thomas, Joyce; Kannewurf, Carl R.; Kanatzidis, Mercouri G. (Center for Fundamental Materials Research, Michigan State University, East Lansing, MI, 48824, USA). Chemistry of Materials, 6(4), 401-11 (English) 1994. CODEN: CMATEX. ISSN: 0897-4756.

AB A new polythiophene deriv. has been synthesized by chem. oxidative polymn. of 3',4'-dibutyl-2,2':5',2''-terthiophene (I)--a monomer designed to yield an ordered, sol., conjugated polymer. Poly-I contains two sol. fractions of differing mol. wts., both of which were characterized by X-ray-diffraction, IR, NMR, UV-vis-NIR, photoluminescence, and ESR spectroscopies, as well as magnetic susceptibility and charge-transport measurements. The mol. wts. of both fractions were detd. by gel permeation chromatog. The

high-mol.-wt. fraction (.hivin.Mw .apprx. 9.1 .times. 103) has one of the longest .pi.-conjugation lengths known for poly(alkylthiophenes) and high cond. The low-mol.-wt. fraction (.hivin.Mw.apprx. 4.3 .times. 103) has a shorter conjugation length and 2 orders of magnitude lower cond. (.apprx.10<sup>-2</sup> S/cm) at room temp. Thermal gravimetric anal. studies show that the polymer is stable in N up to 380.degree.. Variable-temp. charge-transport data (cond. and thermopower) for both doped polymer fractions indicate p-type metallic behavior. These results are compared to previously characterized polythiophenes.

IT **154150-96-6P**

(prepn. and elec. cond. of)

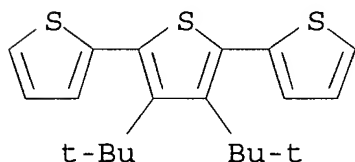
RN 154150-96-6 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-bis(1,1-dimethylethyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 154150-95-5

CMF C20 H24 S3



IT **154150-96-6P**

(prepn. and elec. cond. of)

L10 ANSWER 45 OF 52 ZCA COPYRIGHT 2003 ACS

119:270452 Thermochromic properties of polythiophenes: oligomers vs. polymers. Faïd, Karim; Leclerc, Mario (Dep. Chim., Univ. Montreal, Montreal, QC, H3C 3J7, Can.). Journal of the Chemical Society, Chemical Communications (11), 962-3 (English) 1993. CODEN: JCCCAT. ISSN: 0022-4936.

AB The temp. dependence of the UV-Vis absorption max. of alkyl tetrasubstituted sexithiophene and poly(dialkylterthiophene) have been investigated, and the results are consistent with a rotation of the main conjugated chain induced by an increase of disorder in the side chains upon heating.

IT **151486-98-5P**

(prepn. and thermochromism of)

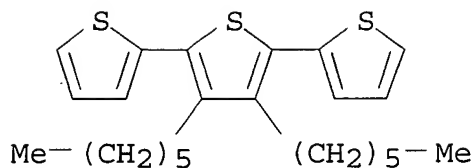
RN 151486-98-5 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dihexyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 151324-66-2

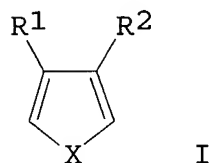
CMF C24 H32 S3



IT **151486-98-5P**  
(prepn. and thermochromism of)

L10 ANSWER 46 OF 52 ZCA COPYRIGHT 2003 ACS  
113:98316 Preparation of electrically conducting polymers. Honda, Kenichi; Shimizu, Takeo; Yada, Tomokazu; Kumagai, Hiroaki (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 02092922 A2 19900403 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-244578 19880930.

GI



AB The title polymers are prepd. by oxidative polymn. of 5-membered ring heterocyclic compds. I (X = O, S, Se, Te, NH, NR<sub>3</sub>; R<sub>1</sub>-3 = C<sub>3</sub>-12 alkyl, alkoxy, alkylthio, alkylseleno, alkyltelluro, alkenyl, and H), and removal of org. solvents under reduced pressure. Thus, dissolving 0.196 g 3,4-dibutylthiophene and 1 g FeCl<sub>3</sub> in 50 mL Et<sub>2</sub>O, and polymg. at 20 mmHg for 2 h gave a dark-green polymer film having cond. 0.47 S/cm.

IT **128910-74-7P**, 3,4-Dibutylthiophene-thiophene copolymer  
(prepn. of, by oxidative polymn., elec. cond. of)

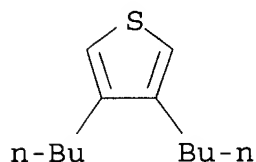
RN 128910-74-7 ZCA

CN Thiophene, 3,4-dibutyl-, polymer with thiophene (9CI) (CA INDEX NAME)

CM 1

CRN 85932-61-2

CMF C12 H20 S



CM 2

CRN 110-02-1

CMF C4 H4 S



IT 128910-74-7P, 3,4-Dibutylthiophene-thiophene copolymer  
(prepn. of, by oxidative polymn., elec. cond. of)

L10 ANSWER 47 OF 52 ZCA COPYRIGHT 2003 ACS

113:7192 Electronic and magnetic character of aniline-thiophene copolymers. Young, C. L.; Polis, David W.; Bain, A. N.; Sapochak, L. S.; Dalton, L. R. (Univ. South. California, Los Angeles, CA, 90089-0482, USA). Macromolecules, 23(13), 3236-42 (English) 1990. CODEN: MAMOBX. ISSN: 0024-9297.

AB The condensation of 2,5-dibromothiophenes or 3,4-dibromothiophene with 1,4-diaminophenylenes under Ullmann conditions yielded the title polymers. Elevated reaction temps. resulted in loss of S by decompn. of the thiophene ring. Lower reaction temps. produced materials of a more rigid rod character with retention of the thiophene ring. The influence of the S heteroatom was clearly visible in the optical and ESR spectra. Magnetic susceptibility measurements on the copolymers produced from the 2,5-dibromothiophenes revealed anomalous temp.-independent paramagnetism, or Pauli susceptibilities, which were usually assocd. with metals. Comparison of the materials produced at higher reaction temps. with those formed at lower temps. indicated that the S atom strongly interacted with spin-carrying defects, thereby detg. the electronic and magnetic character of these novel polymeric systems.

IT 126724-55-8

(electronic and magnetic properties of, structure effect on)

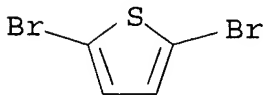
RN 126724-55-8 ZCA

CN 1,4-Benzenediamine, polymer with 2,5-dibromothiophene and  
3,4-dibromothiophene (9CI) (CA INDEX NAME)

CM 1

CRN 3141-27-3

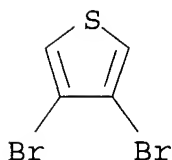
CMF C4 H2 Br2 S



CM 2

CRN 3141-26-2

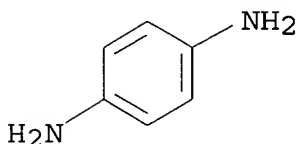
CMF C4 H2 Br2 S



CM 3

CRN 106-50-3

CMF C6 H8 N2



IT 126724-55-8

(electronic and magnetic properties of, structure effect on)

L10 ANSWER 48 OF 52 ZCA COPYRIGHT 2003 ACS

113:6927 Synthesis and characterization of copolymers of aniline and thiophene. Polis, David W.; Young, C. L.; McLean, M. R.; Dalton, L. R. (Dep. Chem., Univ. South. California, Los Angeles, CA, 90089-0482, USA). *Macromolecules*, 23(13), 3231-6 (English) 1990. CODEN: MAMOBX. ISSN: 0024-9297.

AB Reaction of 2,5-dibromothiophene, 3,4-dibromothiophene, or 3-methyl-2,5-dibromothiophene with p-phenylenediamine or 2,5-dichloro-p-phenylenediamine under Ullmann condensation conditions produced copoly(thiophenediyl-1,4-diaminophenylenes). The reaction temp. had a dramatic effect on the structure of the final product. Thermal decompn. of the thiophene rings lead to a fused ladder-type polymer with limited soly. Detailed thermal, spectroscopic, and anal. data afforded the complete characterization as well as established amines to distinguish between fused and unfused systems. Sol. fractions of the polymers allowed characterization of the mol. wt. distribution, which gave inside into the morphol. of the materials. Preliminary measurements (degenerative 4-wave mixing) demonstrated appreciable 3rd-order nonlinear optical response (.chi.(3) .apprx.4 .times. 10<sup>-10</sup> esu) and high laser damage thresholds.

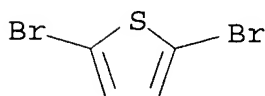
IT 126724-55-8P

(prep. and thermal properties and nonlinear optical properties)

of)  
 RN 126724-55-8 ZCA  
 CN 1,4-Benzenediamine, polymer with 2,5-dibromothiophene and  
 3,4-dibromothiophene (9CI) (CA INDEX NAME)

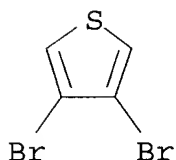
CM 1

CRN 3141-27-3  
 CMF C4 H2 Br2 S



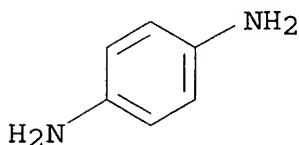
CM 2

CRN 3141-26-2  
 CMF C4 H2 Br2 S



CM 3

CRN 106-50-3  
 CMF C6 H8 N2



IT **126724-55-8P**  
 (prepn. and thermal properties and nonlinear optical properties  
 of)

L10 ANSWER 49 OF 52 ZCA COPYRIGHT 2003 ACS

110:213524 Electrochemical polymerization of substituted thiophenes.  
 Havinga, E. E.; Van Horssen, L. W. (Philips Res. Lab., Eindhoven,  
 5600JA, Neth.). Makromolekulare Chemie, Macromolecular Symposia,  
 24(Eur. Symp. Polym. Mater., 1987, Pt. 3), 67-76 (English) 1989.  
 CODEN: MCMSES. ISSN: 0258-0322.

AB The electrochem. polymn. of 3-(n-butyl)thiophene and of several 3-

or 3,4-substituted .alpha.,.alpha.'-terthienyls was described and properties of the conducting polymers were discussed. A soln. in MeCN of the terthienyl substituted by a K propylsulfonate groups was polymerizable and the polymer was self-doped conductive. This polymer dissolved readily in water and remained partially self-doped in soln.

IT 120723-39-9P

(elec. conductive, prepn. of, by electrochem. polymn.)

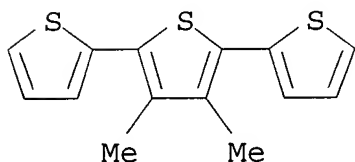
RN 120723-39-9 ZCA

CN 2,2':5',2''-Terthiophene, 3',4'-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 70654-36-3

CMF C14 H12 S3



IT 120723-39-9P

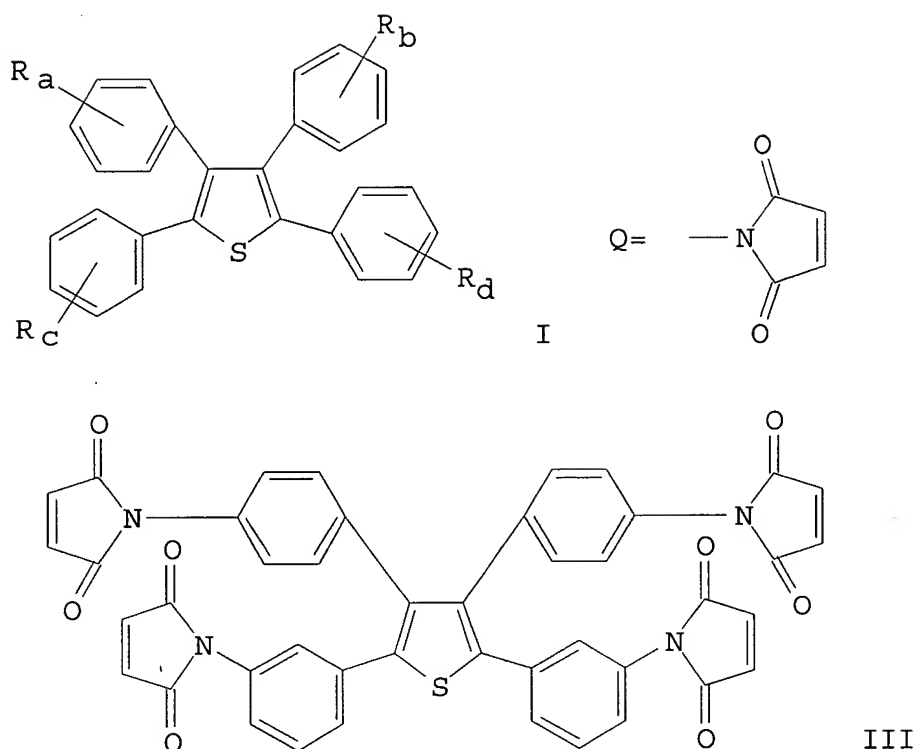
(elec. conductive, prepn. of, by electrochem. polymn.)

L10 ANSWER 50 OF 52 ZCA COPYRIGHT 2003 ACS

110:24431 Process for preparation of (maleimidophenyl)thiophenes for thermosetting polymaleimides. Yamamoto, Hirotsugu; Ozawa, Shigeyuki (Asahi Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63107976 A2 19880512 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-251964 19861024.

GI





AB Title compds. I ( $R = Q$ ;  $a - d = 0-2$ ,  $a + b + c + d \geq 2$ ), which are quickly cured and give heat-resistant polymers, are prepd. by treatment of I ( $R = NH_2$ ) with maleic anhydride (II), followed by cyclocondensation of the resulting polyamic acids. Thus, tetra(4-aminophenyl)thiophene (prepd. by nitration and redn. of tetraphenylthiophene) was treated (20 g) with 8.78 g II in DMF at 40.degree. for 2 h and with 1 g  $(AcO)_2Ni \cdot 4H_2O$ , 1 mL  $Et_3N$ , and 27.4 g  $Ac_2O$  at 60.degree. for 5 h to give 32 g light yellow solid III. III (50 parts) was mixed with 50 parts Epikote 828 at 150.degree., kneaded with 4,4'-diaminodiphenylmethane 30, 2-methylimidazole 1, and silica 130 parts at 100.degree. for 10 min, pulverized, molded at 190.degree. and 40 kg/cm<sup>2</sup> for 30 min, and postcured at 230.degree. for 12 h to give a molding showing heat distortion temp. 252.degree., flexural strength 10.8 kg/mm<sup>2</sup>, and flexural modulus 1230 kg/mm<sup>2</sup>, vs. 230.degree., 10.4 kg/mm<sup>2</sup>, and 1140 kg/mm<sup>2</sup>, resp., for a control using N,N'-4,4'-diphenylmethanebismaleimide instead of III.

IT **118034-08-5P**

(prepn. of, heat-resistant)

RN 118034-08-5 ZCA

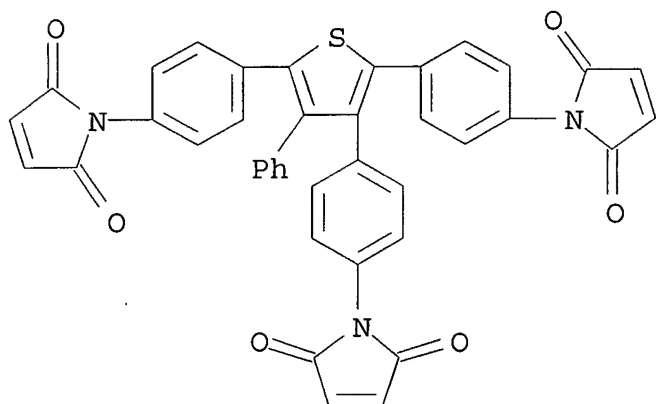
CN 1H-Pyrrole-2,5-dione, 1,1',1'',1'''-(2,3,4,5-thiophenetetrayltetra-4,1-phenylene)tetrakis-, polymer with (chloromethyl)oxirane, 1,1'-[(diphenylthiophenediyl)di-4,1-phenylene]bis[1H-pyrrole-2,5-dione], 4,4'-methylenebis[benzenamine], 4,4'-(1-

methylethylidene)bis[phenol], 1,1',1''-[ (4-phenyl-2,3,5-thiophenetriyl) tri-4,1-phenylene] tris[1H-pyrrole-2,5-dione] (9CI)  
(CA INDEX NAME)

CM 1

CRN 118034-07-4

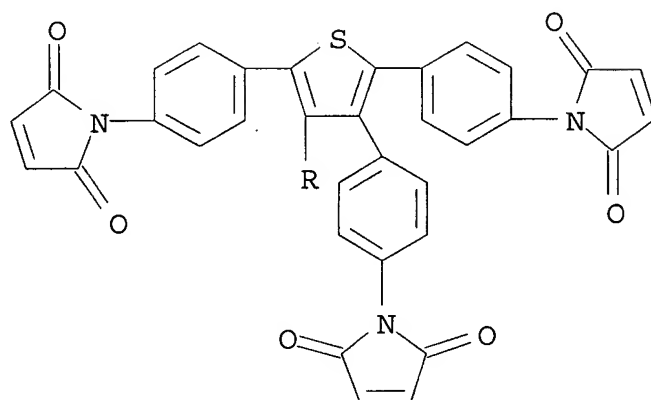
CMF C40 H23 N3 O6 S



CM 2

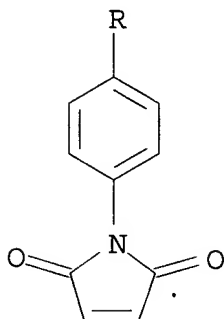
CRN 117969-21-8

CMF C44 H24 N4 O8 S



PAGE 1-A

PAGE 2-A

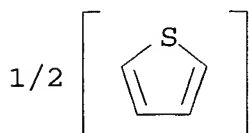


CM 3

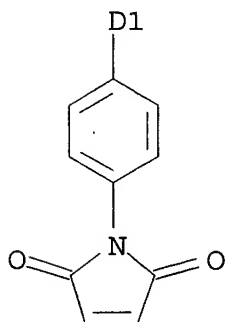
CRN 117968-91-9

CMF C36 H22 N2 O4 S

CCI IDS



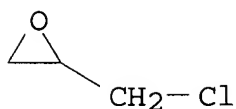
D1-Ph



CM 4

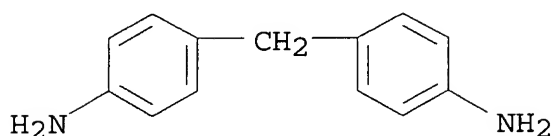
CRN 106-89-8

CMF C3 H5 Cl O



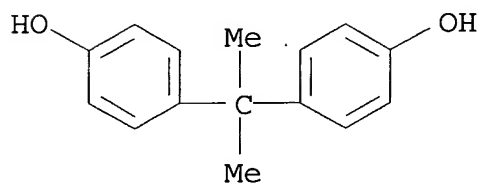
CM 5

CRN 101-77-9  
CMF C13 H14 N2



CM 6

CRN 80-05-7  
CMF C15 H16 O2



IT **118034-08-5P**  
(prepn. of, heat-resistant)

L10 ANSWER 51 OF 52 ZCA COPYRIGHT 2003 ACS

101:152752 Synthesis and electric properties of new thiophene polymers. Andreani, F.; Costa Bizzarri, P.; Della Casa, C. (Ist. Chim. Intermedi, Univ. Bologna, Bologna, 40136, Italy). Comportamento Elett. Mater. Polim., Giornate Stud., 313-14. Assoc. Ital. Sci. Tecnol. Macromol.: Genoa, Italy. (Italian) 1984. CODEN: 52FCA8.

AB Copolymers based on thiophene and dihalogenthiohenes were prepd. in the presence of AlCl<sub>3</sub> for semiconductors. The elec. cond. (.sigma.) of the copolymers was 4.4 .times. 10<sup>-12</sup> - 2.6 .times. 10<sup>-15</sup> S/cm. The .sigma. was significantly increased by doping the thiophene copolymers with I; a 5-fold increase was obsd. for polymers contg. 2,5-dibromo- or 2,3-dibromothiophene units, and a 2-fold increase was obsd. for polymers contg. 3,4-dibromothiophene units.

IT **92450-59-4P**  
(prepn. and elec. cond. of, for semiconductors)

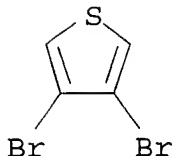
RN 92450-59-4 ZCA

CN Thiophene, 3,4-dibromo-, polymer with thiophene (9CI) (CA INDEX NAME)

CM 1

CRN 3141-26-2

CMF C4 H2 Br2 S



CM 2

CRN 110-02-1

CMF C4 H4 S



IT 92450-59-4P

(prepn. and elec. cond. of, for semiconductors)

L10 ANSWER 52 OF 52 ZCA COPYRIGHT 2003 ACS

77:20092 Synthesis, thermal stability, and electrical properties of deeply colored polymers with anellated phthalocyanine-like systems. Woehrle, Dieter; Kossmehl, Gerhard; Manecke, Georg (Inst. Org. Chem., Freie Univ. Berlin, Berlin-Dahlem, Fed. Rep. Ger.). Makromolekulare Chemie, 154, 111-20 (German) 1972. CODEN: MACEAK. ISSN: 0025-116X.

AB A 2,5-diamino-3,4-dicyanothiophene-terephthaloyl chloride copolymer (I) [35065-03-3] and a 2,5-diamino-3,4-dicyanothiophene-2,5-diformylthiophene copolymer (II) [35065-04-4] are prepd.

A phthalocyanine-like system formed on I and II by treatment with phthalonitrile and Cu acetylacetonate increases the heat resistance and elec. cond. of both polymers. The elec. cond. is detd. in a cell constructed for use in any gas or in vacuo at <150.deg..

IT 35065-04-4P 37130-74-8P

(prepn. of)

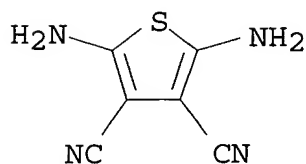
RN 35065-04-4 ZCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with 2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

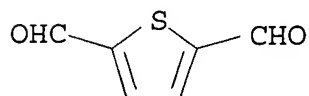
CMF C6 H4 N4 S



CM 2

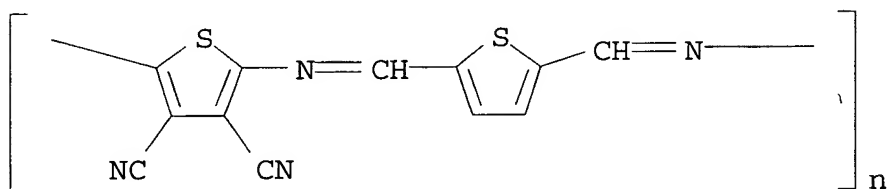
CRN 932-95-6

CMF C6 H4 O2 S



RN 37130-74-8 ZCA

CN Poly[(3,4-dicyano-2,5-thiophenediyl)nitrilomethylidyne-2,5-thiophenediylmethylidynenitrilo] (9CI) (CA INDEX NAME)



IT 35065-04-4P 37130-74-8P  
(prepn. of)